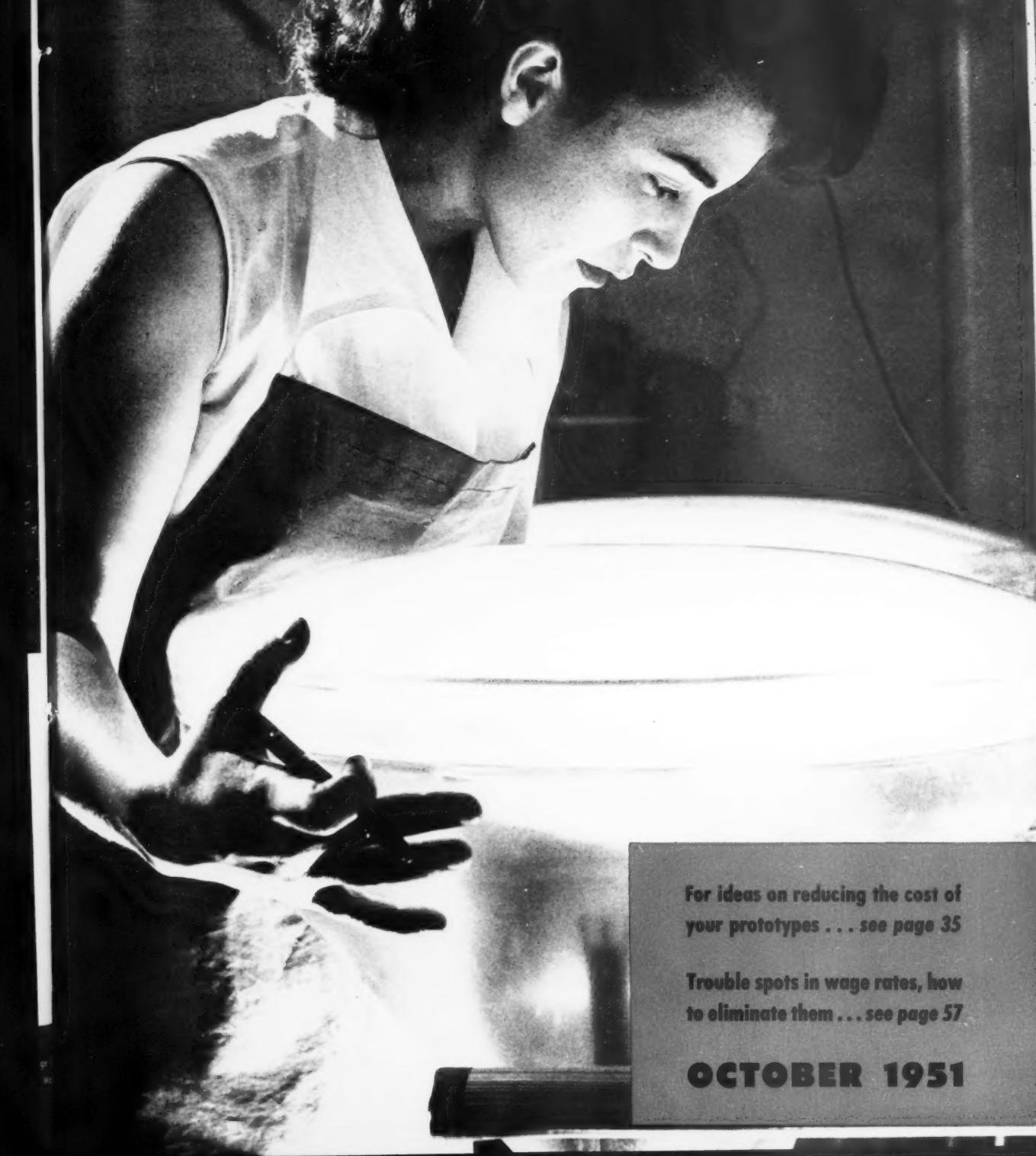


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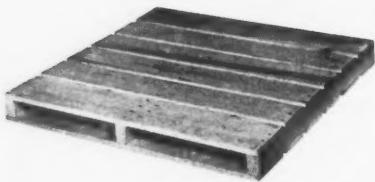
WESTERN INDUSTRY



For ideas on reducing the cost of
your prototypes . . . see page 35

Trouble spots in wage rates, how
to eliminate them . . . see page 57

OCTOBER 1951



CABCO DOUGLAS FIR PALLETS

Heavy duty pallets, engineered by Cabco to size and specification meeting your exact requirements. Made exclusively from sturdy, long-lasting Douglas Fir, most practical pallet stock available. Delivered to you ready to use. Investigate Cabco's low prices and fast delivery on carload orders.

There's more to a CABCO container than wood, wire and price

Cabco has its own timberstands, its own mills, its own uniform supply of clear, strong Douglas fir. From forest to you, we control every step in the design and manufacture of Cabco wooden shipping containers. That's why they're uniform in strength, uniform in lightness, uniform in durability, dependable in performance. That's why Cabco has been the West's foremost designer and supplier of wooden shipping containers since 1883.

Sold only by

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501 DOOLEY BUILDING, SALT LAKE CITY 1

CABCO
CONTAINERS

A product of the California Barrel Company, Ltd

Avoid messy oil

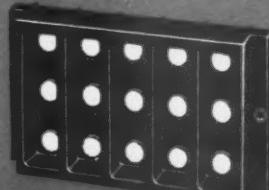
Specify
Bulletin 646
Manual Transformer Type
REDUCED VOLTAGE STARTERS
with
air break contacts

Never before has a manually operated auto-transformer-type starter been available in such high ratings with air break contacts. Starters rated up to 75 hp, 220 volts; 150 hp, 440-550-600 volts have air break silver alloy contacts that require no cleaning, filing, or dressing. This eliminates contact maintenance . . . results in longer contact life . . . avoids dirty, messy jobs. Only the Size D starter—rated up to 125 hp, 220 volts; 250 hp, 440-550-600 volts—requires oil immersed, copper to copper contacts. Write for Bulletin 646.

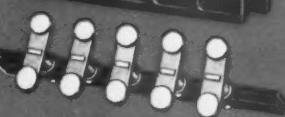
Allen-Bradley Co.
1316 S. Second St., Milwaukee 4 Wis.



✓ Longer
Contact Life



✓ Less
Maintenance



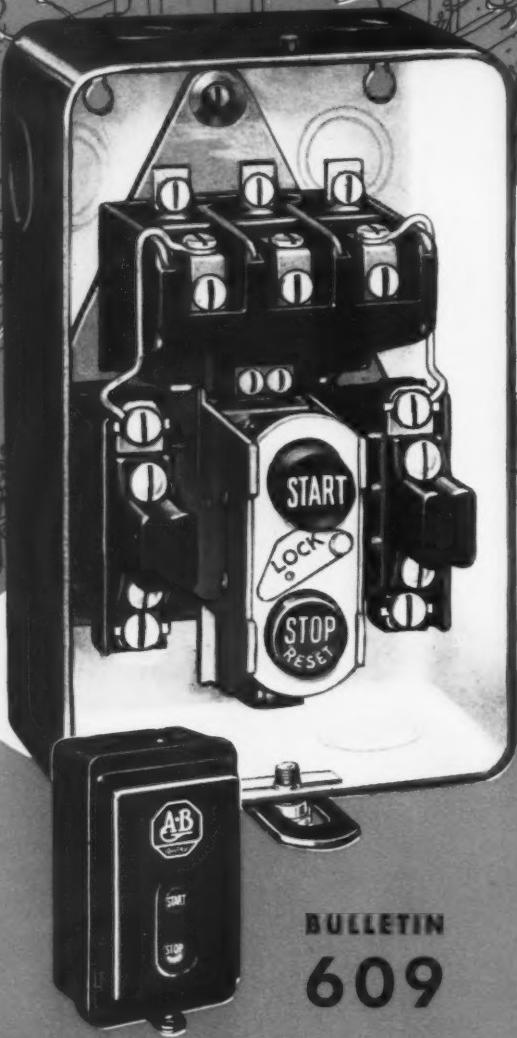
✓ Double break, silver alloy contacts

Close-up
of stationary
contact block
and movable
contacts.

GELES 23
2291
ALLEN-BRADLEY
QUALITY
MOTOR CONTROL



Where special conditions must
be satisfied, the standard
Bulletin 646 Starter can be
supplied with an oil tank.



BULLETIN
609

most acclaimed manual starter on the market!

Bulletin 609 hand operated starters are the recognized standard for starting and stopping small a-c motors in these maximum ratings:

Single phase— $1\frac{1}{2}$ hp, 110 volts; 3 hp, 220 volts.

Polyphase—5 hp, 220 volts; $7\frac{1}{2}$ hp, 440-550 volts.

Ideal for industrial applications where remote push button control stations and no-voltage release are not required.

- **No Contact Maintenance**—The large double break, silver alloy contacts never need cleaning, filing, or dressing.
- **Quick Make and Break**—A simple toggle opens and closes the contacts with a snap action, preventing contact burning.
- **Push Button Operation**—Convenient "Start" and "Stop" buttons make the Bulletin 609 so easy to operate.
- **Reliable Overload Protection**—Two manually reset breakers protect the motor at all times from sustained overloads.

- **Small Size**—In spite of high current interrupting capacity, Bulletin 609 manual starters are small in size.
- **Easy to Install**—Lots of wiring room, terminals accessible from front, and knockouts on all sides of cabinet.
- **Weatherized Enclosure**—Bulletin 609 starters have pressed steel cabinets, weatherized to prevent corrosion.
- **Trouble Free Service**—Millions of these starters in operation testify to their satisfactory performance.

Allen-Bradley Co., 1316 S. Second Street, Milwaukee 4, Wis.

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QUALITY
MOTOR CONTROL



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25c per Copy \$2.00 per Year

Published Monthly by
KING PUBLICATIONS
609 Mission Street
San Francisco 5, Calif.
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WESTERN INDUSTRY



VOLUME XVI

OCTOBER • 1951

NUMBER 10

TABLE OF CONTENTS

Editorial Comment 31

- Economic Currents Will Decide
More Home Folks
Simplicity Pays

Articles

- Prototypes Can Cost Less, if Imagination Replaces Dollars 35
"A" Is for Action in Arizona 38
Plant Relocation: A Good Time for Modernization 42
"Live While You Work" Why Work to Live? 46
Ultrasound Sounds Off to Tell You Its Usefulness 50
A Suggestion for Visual Application Forms 55
Trouble Spots in Wage Rates Narrowed by Job Evaluation 57
How Would MY Building Burn? Just Ask Yourself! 67

Departments

- Mail Box 31
Calendar of Meetings 33
Western Waggyery 33
Processes and Products in Today's View 40
New Materials and Equipment 90
Helpful Literature 103
The West On Its Way 105
Westerners at Work 112
News of Distributors and Salesmen 115
Classified Advertising 117

Advertisers In This Issue 118

Front Cover

No, it's not another version of the fabled crystal ball—the operator is checking the luminescent coating on a television tube. This is one of the everyday processes in the new television tube rebuilding plant recently put into operation by the Glasscraft Company of Los Angeles.

**tough floors for
tough conditions**

FEREM FLOORS

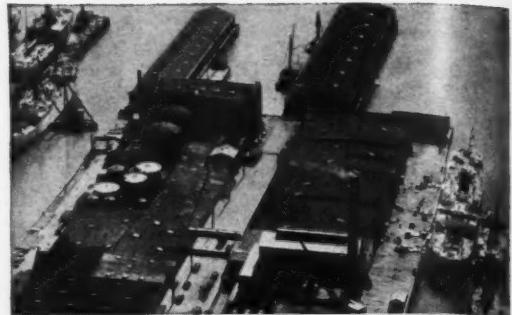
BLUE TEMPER

In your plant you can have dense, ductile floors almost diamond hard, which are not slippery, showing no noticeable wear for long periods and involving practically no upkeep costs. Such floors are constructed with Ferem, the "Blue Temper" component in the floor topping, replacing sand, stone and silica.

Ferem is used in heavy duty floors, loading platforms, corridors and runways in newly constructed buildings, or when replacing worn or eroded floors. Ferem is resistant to the corrosive action of chemical solutions—and highly slip-proof under the wet floor conditions of many industries.

USED IN

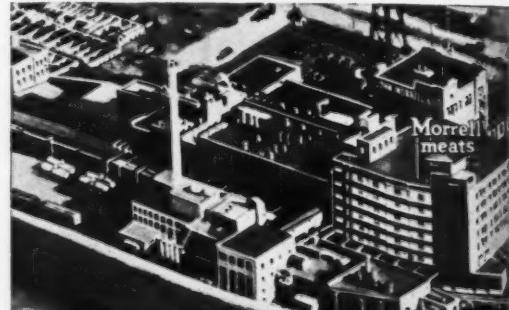
- Breweries and Beverage Plants
- Distilleries
- Dairies
- Packing Houses
- Canning Plants
- Chemical Plants
- Industrial Plants



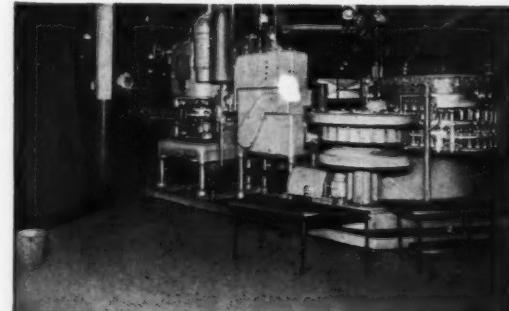
In the Sucrest refinery of American Molasses Co., Brooklyn, N.Y.



In the kitchens of Thrifty Drug Chain, Los Angeles, Cal.



In the packing plant of John Morrell & Co., Topeka, Kansas



In the brewery of Miller Brewing Co., Milwaukee, Wis.

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W1-51

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- NAME _____ TITLE _____
- COMPANY _____
- ADDRESS _____
- CITY _____ STATE _____

SPACEMASTER®

ELECTRIC FORK TRUCK

FOR HEAVY DUTY
HIGH SPEED
OPERATION

new
unprecedented

3000 POUND RATING —

PLUS 61 INCH OUTSIDE TURNING RADIUS provide ideal heavy duty, high speed, warehouse fork truck.

MOST STABLE, MOST MANEUVERABLE, AND SAFEST 3000 lb. capacity fork truck for handling up to 48" long loads. Can also be used for transporting up to 4000 lbs. in load lengths up to 32".

Plus these extra "Standrive" Advantages.

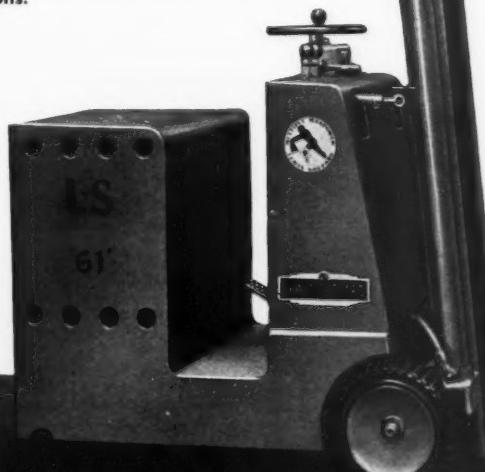
STANDRIVING IN REVERSE IS AS EASY AS FORWARD. Trailing the load gives full vision with convenient operation.

EASY ON, EASY OFF! Clear through corridor allows quick exit and entrance either side. Saves hours of operator's time on supplemental duties. Meets Government and industry safety regulations.

CAPACITIES
3000 Lbs.
up to 48" load length

LIFT 127"
(collapsed height 83")

TURNING RADIUS
61"



LEWIS-SHEPARD

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The Truck With Plus Features

MINIMUM AISLES

Will right angle stack 40" long pallets in 10' aisles with recommended operating clearance.

Plus

GREATER LATERAL STABILITY

NEW welded frame and NEW counter-weighted construction provide ideal weight distribution — lowest center of gravity.

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Plus

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Plus

FASTER LIFT

New, high-efficient lifting motor and hydraulic pump.

Plus

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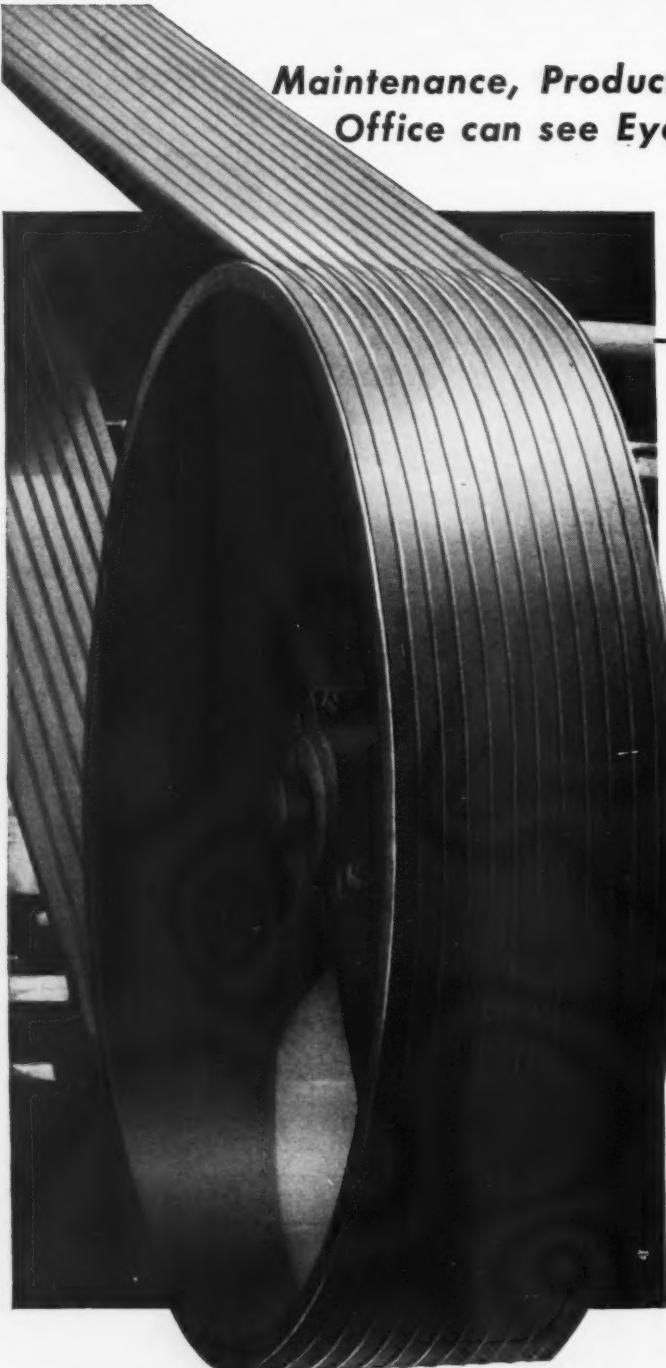
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"61"



The "MASTER" Line

Maintenance, Production, Purchasing and Front Office can see Eye to Eye on this "Baby"



It's a TOUGH, LONGER-LASTING BULL DOG V-BELT!

Yes, a Bull Dog V-Belt has something for everybody. Your engineers and production heads who have enough on their minds already with shortages and the necessity for increased output will appreciate the **SPECIALLY ENGINEERED BWH CORD SECTION** and its high tensile strength. They'll get the superior load carrying capacity from **BULL DOGS** and the ability to absorb shock loads that's needed.

Your maintenance men (engineers, too) will note the **QUALITY CONTROLLED COMPOUNDS** developed by BWH which run cooler and do not crack or deteriorate under severe flexing. They'll probably note also the **MINIMUM STRETCH** — due to a new and exclusive technique in processing Bull Dog Cords. They'll be *sure* to note the less slippage, fewer adjustments, longer belt life that results.

Your maintenance men will also okay the Bull Dog V-Belt's **DURABLE COVERS**. They're made of closely woven, heavy, bias-cut fabric that takes the torturous wearing action where the belt meets the sheave — seals it against the penetration of dirt, grease and moisture.

With it all adding up to less money *out* in belt repairs and replacements and more money *in* from maintained and increased production ... don't you think Purchasing and the Front Office will be glad to go along?



TOUGH PROBLEMS INVITED!

Ask us or your nearest BWH distributor about your power transmission belting, conveyor belting or hose problems. We're specialists in making mechanical rubber products work better, longer.

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER CO.

Distributors in all Principal Cities

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cut the cost of bumps*



REDUCE LOAD BREAKAGE—Big burly Mono-Cushions soak up shock without sacrificing stability, save plenty of money in moving fragile loads.

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REDUCE FLOOR WEAR—Easy-going Mono-Cushions protect floors from the pounding of heavily laden trucks, cut floor maintenance costs.

THE MANUFACTURER OF YOUR VEHICLES can supply you, through his service branches, with the type of Monarch Tire engineered for your equipment.



THE
MONARCH
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250 LINCOLN PARK • HARTVILLE, OHIO

SPECIALISTS IN INDUSTRIAL SOLID TIRES AND MOLDED MECHANICAL RUBBER GOODS

A user REPORTS....

After their satisfactory experience with the 500,000 C. M. insulated aluminum cable (at right), National Supply Co., Torrance, Cal., says, "We will seriously consider aluminum when similar installations are planned." These cables, insulated with RH 600 v. U. S. Paracore, are connected to bus, from which they carry current to distribution panels for such heavy loads as welding machines, shears, rolls and other equipment.

figure it in ALUMINUM and you figure it low

When you plan new production lines, add feeders for heavier loads, get prices both ways—in aluminum and in copper. You'll find you can make worth-while savings with aluminum . . . and installation is faster, easier because of aluminum's light weight.

Although the rearment program restricts the use of aluminum, we are ready to help you with the planning for trouble-free, low-cost wiring.



FREE INSTALLATION BOOK

"Questions and Answers" on installation of aluminum conductors. Write for it now—ALUMINUM COMPANY OF AMERICA, 1774K Gulf Bldg., Pittsburgh 19, Penna.



Aluminum Conductors



of ALCOA ALUMINUM are made by leading manufacturers

Chances are 500 to 1 there's a **FRUEHAUF TRUCK BODY already designed to fit your special needs, too!**



COUNT all the advantages of buying a Fruehauf before you consider any other Truck Body. 1) Custom-fitted to your job over 500 ways—in body options alone. 2) All-steel "Unit-Built" like Fruehauf's rugged Aero-van Trailers. 3) Wheelhousing and straight-frame models . . . in all popular lengths. 4) Fast assembly, mounting and painting service at 80 Branches coast-to-coast. 5) Custom-built quality . . . production-line prices.

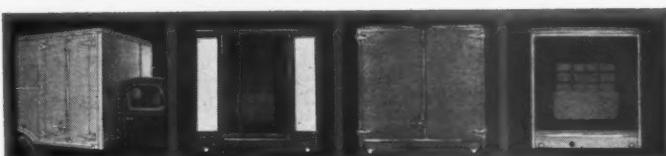
See your local Truck Dealer or Fruehauf man, or write for our *new catalog* and *model make-up kit* — Fruehauf Trailer Co., Body Division, Detroit 32.

FRUEHAUF
Truck Bodies

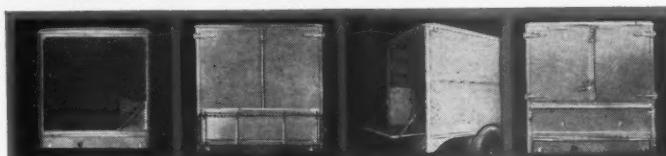
Only Fruehauf "Unit-Built" Bodies Offer All These Options . . .



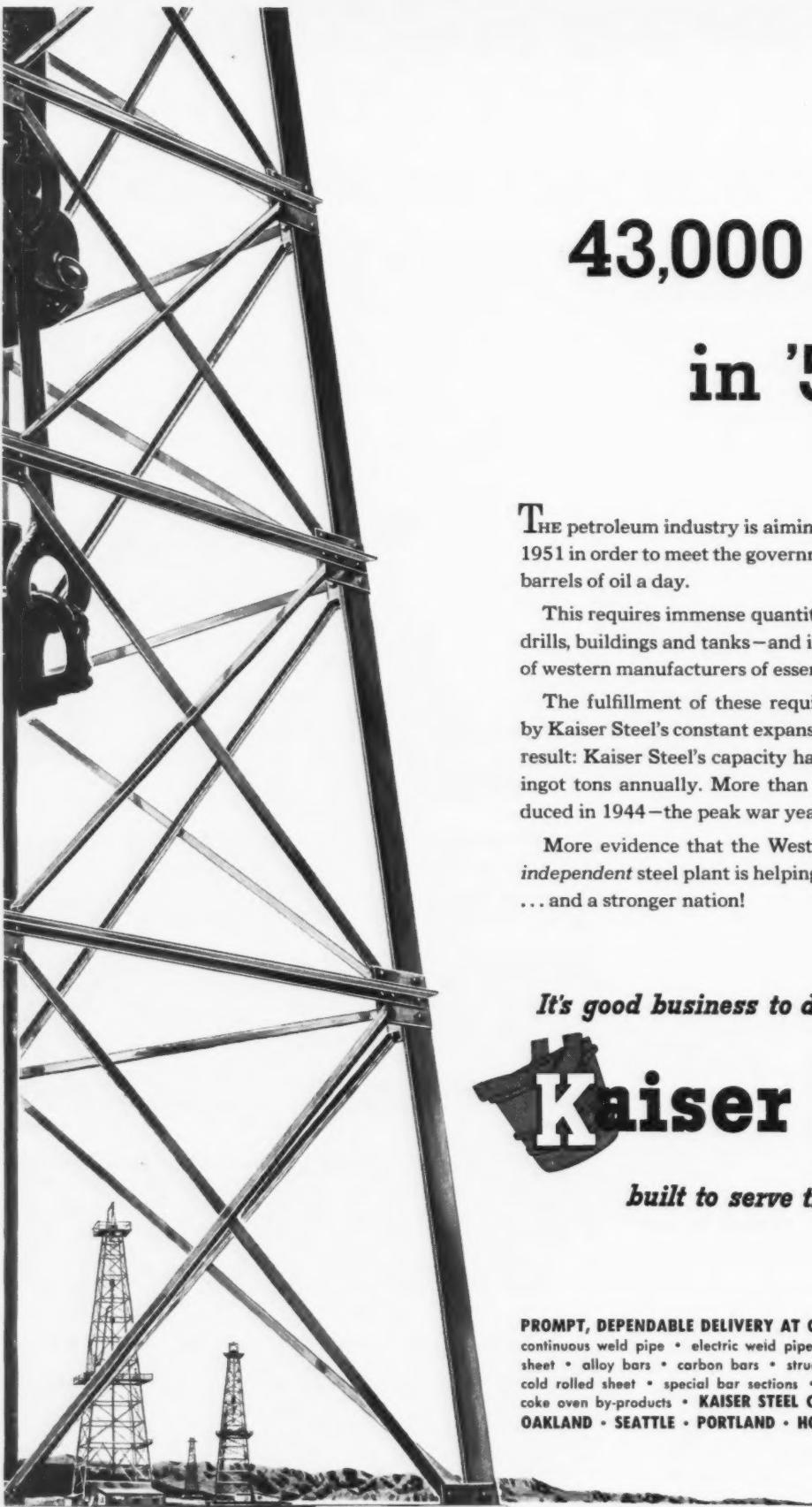
1. Open Top 2. Solid Rear End 3. Solid Sides 4. Single Side Door



5. Double Side Door 6. Narrow Double Rear Doors 7. Full-Width Double Rear Doors 8. No Rear Door



9. Express Gate Rear 10. Tailgate (Outside Type) 11. Tailgate (Flush Type) 12. Tailgate (Doors Above)



43,000 more in '51!

THE petroleum industry is aiming at 43,000 new wells for 1951 in order to meet the government's goal of 7 1/4 million barrels of oil a day.

This requires immense quantities of steel—for derricks, drills, buildings and tanks—and is in addition to the needs of western manufacturers of essential civilian products.

The fulfillment of these requirements has been aided by Kaiser Steel's constant expansion of facilities. With this result: Kaiser Steel's capacity has now reached 1,380,000 ingot tons annually. More than *double* the amount produced in 1944—the peak war year!

More evidence that the West Coast's only integrated, independent steel plant is helping to build a stronger West ... and a stronger nation!

It's good business to do business with

Kaiser Steel

built to serve the West

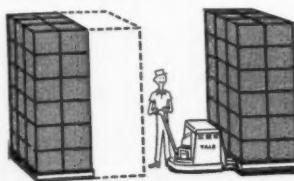
PROMPT, DEPENDABLE DELIVERY AT COMPETITIVE PRICES • plates
continuous weld pipe • electric weld pipe • hot rolled strip • hot rolled
sheet • alloy bars • carbon bars • structural shapes • cold rolled strip
cold rolled sheet • special bar sections • semi-finished steels • pig iron
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SQUEEZE PLAYS... *that save... you money!*

SAVE

SPACE!

Thousands of square feet of it in aisles alone! Yale's Worksaver needs less room to work in so you gain valuable extra space for storage and production.*



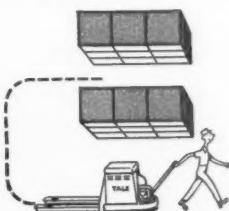
*Consider this saving before building new facilities.

SAVE

TIME!

You can quickly work heavy loads with this shorter, lighter, more maneuverable Worksaver, cut costs on jobs bigger trucks can't get at.

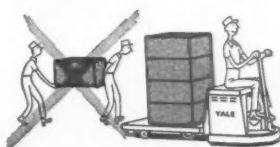
SHORT
TURNING
RADIUS



SAVE

MANPOWER!

One man at the steering handle can free an entire gang from the "sweat, strain and sprain" of heavy hand lifting.



"WALK IT OR RIDE IT!"

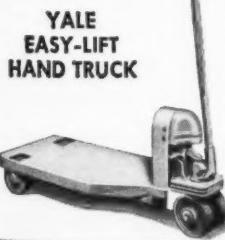
Eliminate waste on hard-to-get-at jobs with these **YALE WORKSAVERS**

SAVE SAVE SAVE—that's the story of YALE'S Stubby Worksaver!

These pallet or platform trucks squeeze into small spaces to do big moving and lifting jobs...open up whole new areas of your plant to faster, more efficient materials handling...*cut your time and labor costs as much as 75%*!

The Yale Worksaver is a rugged trouble-free truck, too! A powerful electric drive unit, hydraulic lift and welded steel frame keep it on the job for years with a minimum of servicing.

Here's another **YALE** "expert" at cutting your costs



**YALE
EASY-LIFT
HAND TRUCK**

...Use it for short hauls, or in combination with Yale power trucks. **YALE** Easy-Lift makes it a cinch to lift and move heavy loads. It's light, maneuverable, sturdily constructed.



**THE YALE & TOWNE MANUFACTURING CO., Dept. 2610
Roosevelt Boulevard & Haldeman Avenue, Philadelphia 15, Pa.**

I am interested in cutting my materials handling costs.

Please send me free "Worksaver" literature.

Please send me free literature on Hand Trucks.

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Company _____

Street _____ City _____ State _____

YALE & TOWNE

The Yale & Towne Manufacturing Co., Philadelphia 15, Pa.

In Canada write The Yale & Towne Mfg. Co., St. Catharines, Ontario.

YALE is the registered trademark of The Yale & Towne Manufacturing Co.

STANDARD ENGINEER'S REPORT

LUBRICANT *CALOL E.P. Roller Grease*
UNIT *16" x 44" roll neck bearing*
TEMP. TO *140°F—*
CONDITIONS *extreme pressures*
PERIOD *875 hours*
FIRM *Kaiser Aluminum & Chemical Corp., Spokane, Wash.*

Grease retains "body" after 875 hours in rolling mill bearing



CALOL EP ROLLER GREASE-1X, in this big roll neck bearing and chuck, was sealed around the bearing during 875 hours of service in a "hot" rolling mill. No grease leaked from the chuck during operation in

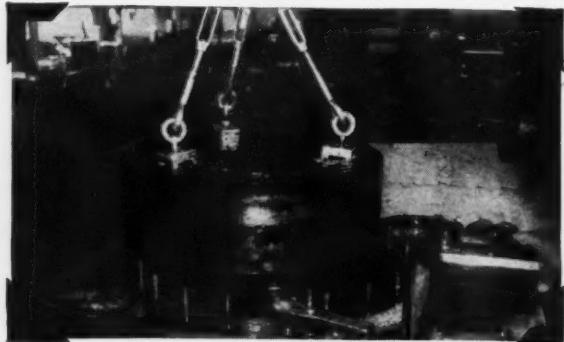
THE 2800-POUND BEARING shows no wear on either the rollers or race. There was no sign of corrosion in the chuck and neoprene seals were perfect. After cleaning the unit was re-assembled, refilled with 125 pounds of CALOL EP Roller Grease-1X, and put back in service.

REMARKS: The Kaiser Rolling Mill at Spokane, Washington, produces sheet and coil aluminum. Roll neck bearings in the mill have been lubricated with CALOL EP Roller Grease since 1946. Made from highly specialized stocks, this grease will solve many of your anti-friction and plain bearing lubrication difficulties where extreme pressures, high temperatures or water conditions present problems too great for conventional greases.



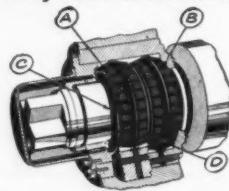
FREE CATALOG: "How to Save Money on Equipment Operation," a new booklet full of valuable information, is ready for you. Write or ask for your free copy today.

TRADEMARK "CALOL" REG. U.S. PAT. OFF.



temperatures up to 140°F. The grease retains high lubricating qualities—is being changed only because it is practice to remove and service the bearings at intervals of approximately 1000 hours.

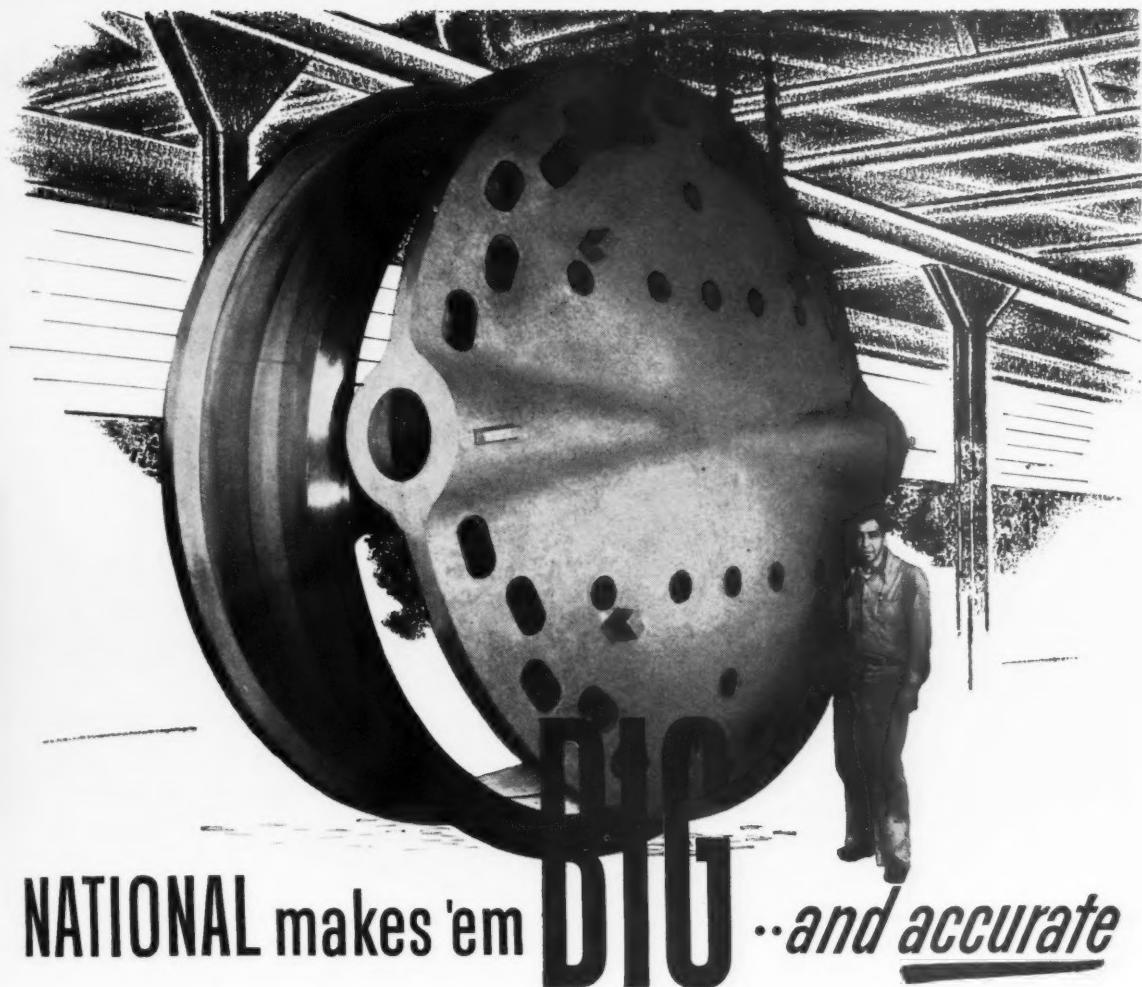
How CALOL EP Roller Grease protects heavy-duty anti-friction bearing



- A. Contains extreme pressure additives—lubricating film will not squeeze off under heaviest loads.
- B. Highly water-resistant—sticks on bearings even where excessive water used for cooling.
- C. Feeds slowly and evenly—creeps into small clearances and assures good lubrication. Pumps easily at low temperatures.
- D. Will not corrode metal or harm neoprene and plastic seals.

STANDARD TECHNICAL SERVICE checked this product performance. For expert help on lubrication or fuel problems, call your Standard Fuel and Lubricant Engineer or Representative; or write Standard Oil Company of California, 225 Bush St., San Francisco.

STANDARD OIL COMPANY OF CALIFORNIA



NATIONAL makes 'em **big** ...and accurate

Above, you see two components of a 126" Butterfly Valve, produced at National Supply's Torrance Plant. The complete facilities available here produced the pattern, made the casting, heat-treated, tested and rough-machined the 7 ton housing component as well as the disc section, weighing 18,480 lbs.

When you need big, heavy parts manufactured to precision tolerances, check

with National's Torrance Plant . . . the biggest in the West. This plant, fully integrated from electric-furnace melting to precision finishing, can do your big job quickly, and will do your job right.

Call us about your next heavy fabrication problem. Meanwhile, send for our free booklet, "From Melting Furnace to Finished Product." For your copy of this booklet, write to Department 210.



IDEAL PRESSED STEEL FORGINGS • BILLETS AND LARGE BARS • STEEL CASTINGS AND SPECIAL MACHINERY
MELTING • FORGING • CASTING • MACHINING • HEAT TREATING • ASSEMBLING • WELDING • TESTING

THE NATIONAL SUPPLY COMPANY

INDUSTRIAL PRODUCTS DIVISION

TORRANCE, CALIFORNIA • LOS ANGELES AREA



PIPING POINTERS 16-mm SOUND FILM

Free Usage for Group Training

A 30-minute motion picture that dramatizes the fundamental information in the Piping Pointers Manual. Ideal for classroom or plant training groups. Available on request through your local Crane Branch.

CRANE
VALVES • FITTINGS • PIPE • PLUMBING • HEATING

Just Out!

**NEW 36-PAGE
EDITION OF**

PIPING POINTERS

**...a bigger, more helpful
handbook for training
maintenance workers**

You asked for 1/4 million copies of the last edition of Piping Pointers. You found it a big help in training beginners and refreshing veterans in your piping crews. The bigger and better edition is just out—changed in appearance but not in purpose. Crane again offers this booklet—to help keep your piping systems at peak efficiency.

Piping Pointers talks facts . . . not theory. Thoroughly covers the fundamentals of good, sound, everyday piping practices . . . in easy-to-grasp, non-technical language. Its many "how-to-do-it" features are illustrated for easy understanding.

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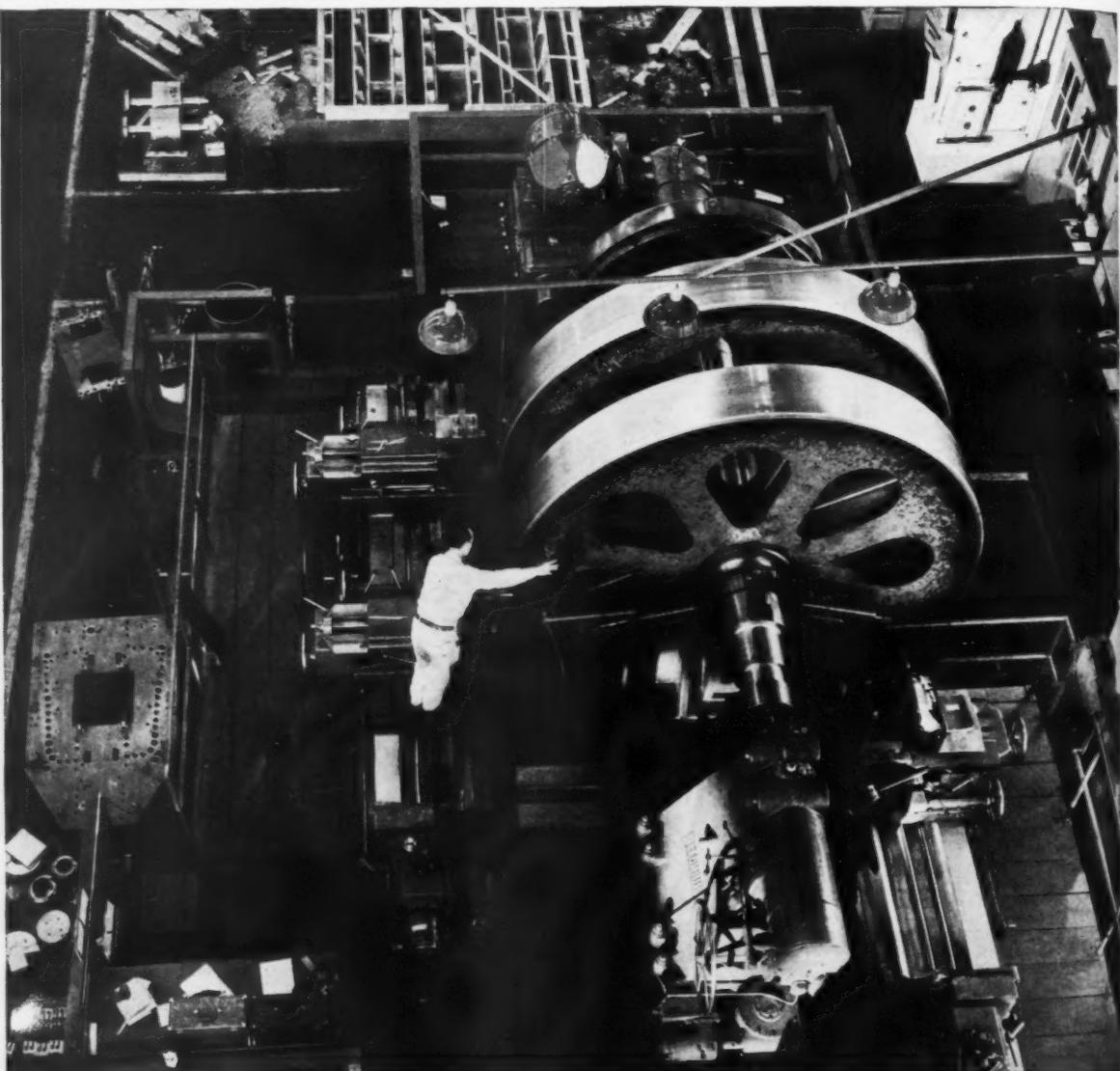
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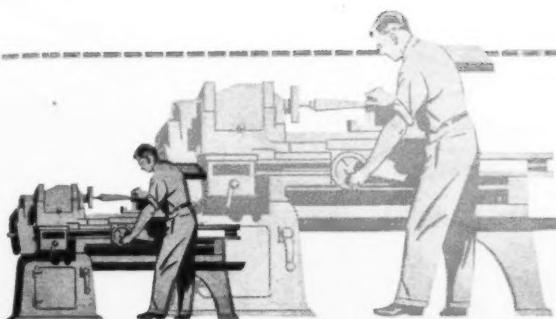
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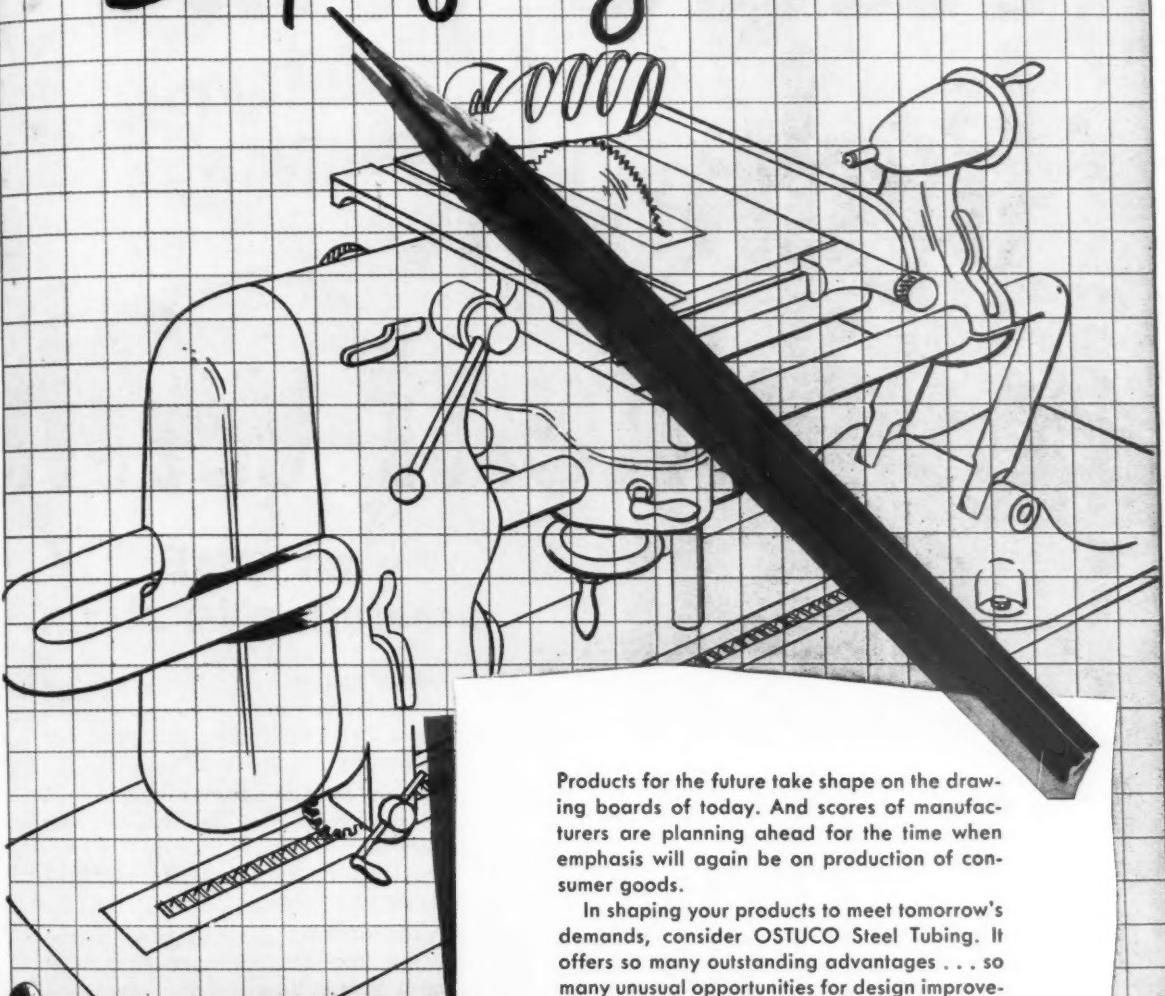
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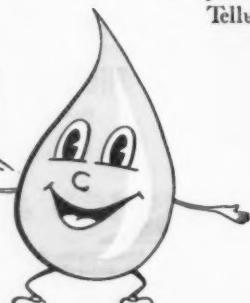
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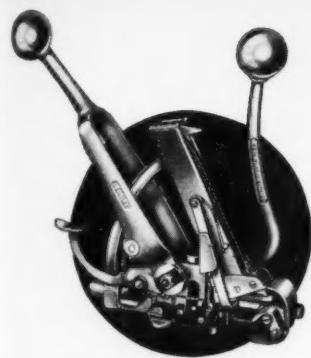
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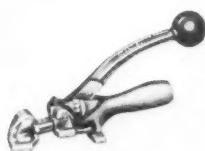
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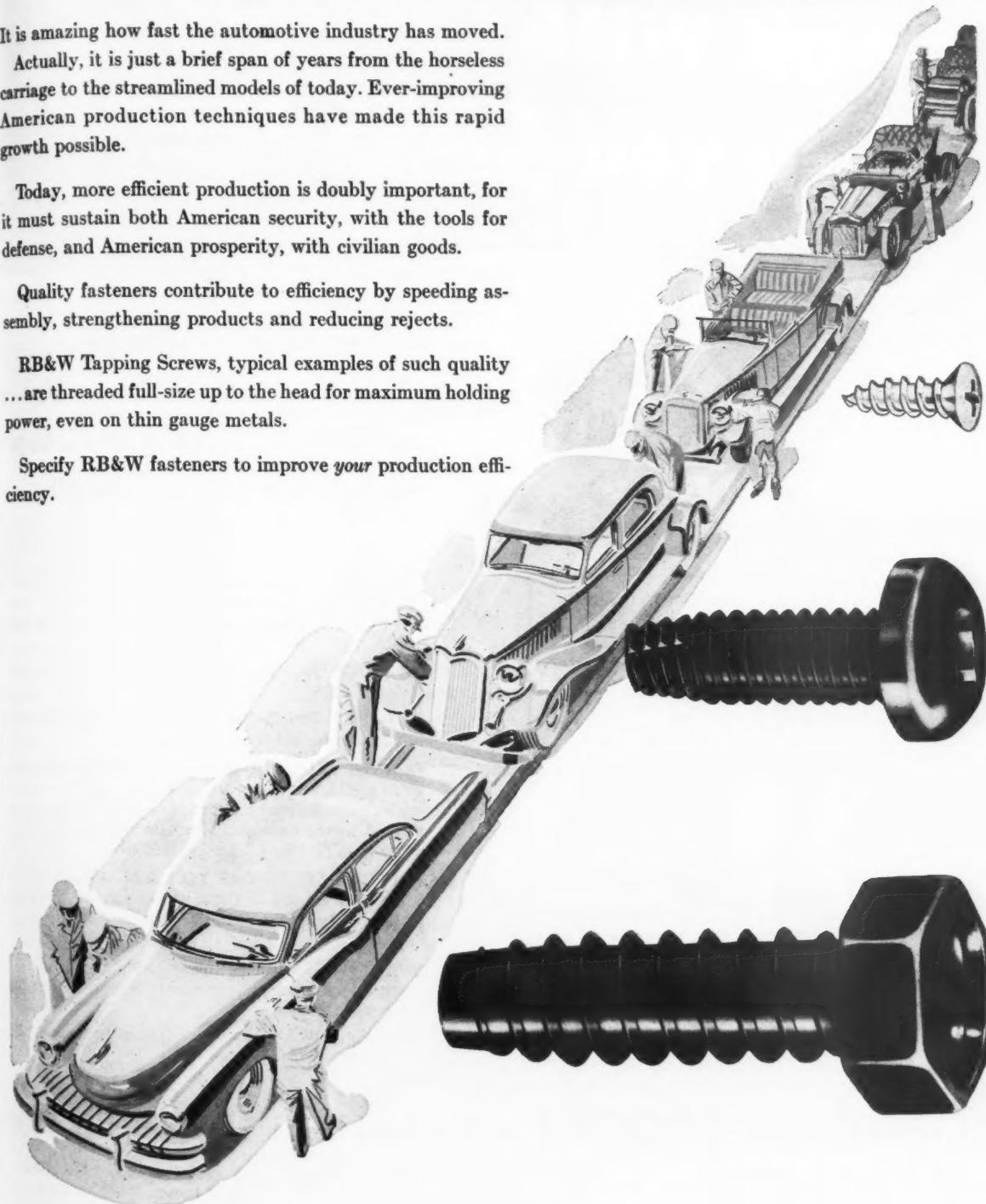
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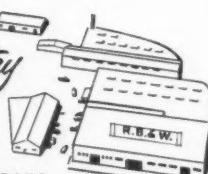
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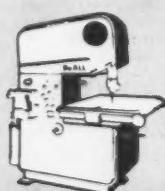
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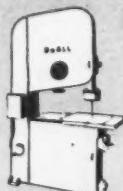
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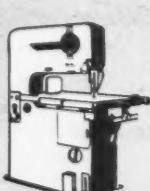
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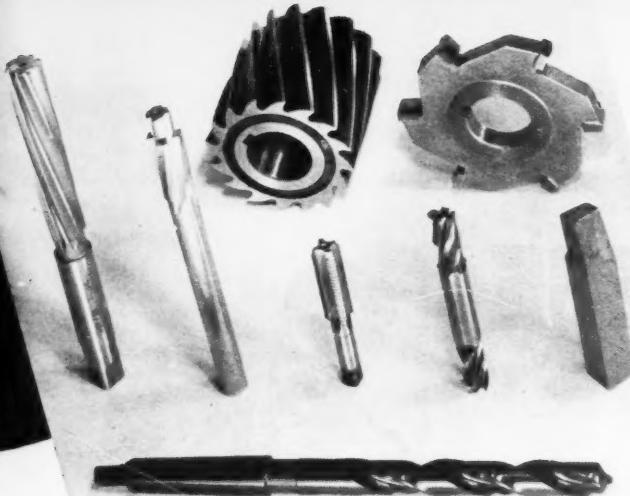
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IN OUR MAILBOX

Forecast Comes True

Editor, *Western Industry*:

You certainly were correct in your "Labor Outlook" survey which appeared in the January 1951 issue of *Western Industry* in predicting that "bargaining pressures may reach peak in April," insofar as Northwest lumber was concerned. The first major settlement with the AFL was reached in late February, but rather tumultuous negotiations with the CIO lumber unions culminated in the first settlement on April 1 with the Weyerhaeuser Timber Company, and followed in rapid succession over the next three or four weeks by agreements with operators in other areas.

As to the views of this Association on federal controls, I take pleasure in attaching a copy of our Board's action of June 7 on this matter. Although the issue apparently is dead, we note that President Truman has requested that the Congress give him tighter controls over the American economy.

WALTER A. DURHAM
Secretary-Manager
Lumbermen's Industrial
Relations Committee, Inc.,
Portland, Oregon.

(Our January Review and Forecast Number carried an exclusive analysis of labor trends in the West as reported by the principal employers' organizations in the area, as one of the services to industry provided by this annual number.)

* * *

Protecting Industrial Development

Editor, *Western Industry*:

Regarding your editorial, "Protecting Industrial Development," I am very happy that you are continuing to call to the attention of your readers a subject which has extensive implications, particularly as we continue our substantial industrial growth.

I believe that planners generally are coming to recognize that their primary responsibility is to prepare for an orderly, balanced development of their communities rather than just to prevent encroachment of the "lower" uses upon property zoned for "higher" land use. In Los Angeles, our zoning ordinance restricts residential utilization of M-3 property. Such restriction, however, is not applied to the M-2 or M-1 zones as the legal experts advise that the courts might not uphold such a regulation of the land owners' rights.

I believe, however, that it would be possible to restrict the type of construction of all structures, including residential, erected upon industrial property, because of the fire hazard. If the structure were required to be "fire restrictive," residential construction costs would increase approximately 20%, I am told. A residential builder, therefore, would think twice before incurring that additional expenditure.

Now the planner is given another headache in the program of the National Security Resources Board on "industrial dispersion." The advice is that "these industrial areas should be from ten to 20 miles from any densely populated section, or highly industrialized section of an urban area." At the same time, the sites should be served by more than one transportation facility; they

Continued on page 33

EDITORIAL COMMENT

Economic Currents Will Decide

NEXT SPRING may see the whole freight rate picture of the West projected in dramatic fashion, if the Interstate Commerce Commission gets hearings under way that soon on its long-projected program for extending into Mountain-Pacific territory the proposed nation-wide uniformity of class ratings for rail freight. Commissioner Aitchison had an informal meeting at Salt Lake City early in September with rails and shippers, at which he indicated that probably three hearings would be held, two on the Coast and one in the Mountain area. The rails said they could not get their side ready before summer, but the ICC seems eager to get action, so the hearings may be earlier.

Territorial splits, not only between shippers, but also between railroads, may be looked for, and every interested party should start immediately getting information together so that the Commission may have the full benefit of all available knowledge. Heat does not necessarily have a beneficial effect in clearing up a situation, but light always does.

In the long run it should be revealed that economic currents are the determining factor, and that the best course for all is to take advantage of them, rather than to oppose them.

More Home Folks

IT GIVES the Atomic Energy Commission a sort of "home folks" feeling with us to note the number of Westerners by birth who are connected with its operations in the West. For example, George P. Kraker, hitherto Santa Fe field manager at Albuquerque and now deputy manager of Santa Fe operations, was born at Gallup and was graduated from New Mexico Military Academy at Roswell. Elmo R. Morgan, who has been assistant to the manager of Santa Fe operations and is now manager of the new Los Alamos field office, was born at Liberty, Idaho, and is a graduate of Utah State Agricultural College. We should point out also that L. E. Johnston, manager of the Arco Project in Idaho was Montana born and educated, and that Gordon Dean, a member of the commission itself, is a native of Seattle, a graduate of the University of Redlands (California) and attended the USC law school. (Probably there are a lot more Westerners with AEC that we should mention, but this editorial is only intended as a passing comment, not a research project.)

Simplicity Pays

"DEAR FELLOW EMPLOYEE" is the way Willamette Iron and Steel Company's employee's letter starts out. It also encloses a post card asking whether the news letter is what is wanted, and for suggestions as to how to make it better. The letter tells what progress the company is making with its various jobs, what some of the obstacles are, ends up with a bit of news and a safety slogan from one of the employees.

Our comment? Simply that it is a bit refreshing after some of the ponderosities and trivialities too often to be found in house organs and other communications to employees.



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- 6) **1500 lbs.** capacity at 24" load centers (Skeleton counterweight plus optional additional counterweight)

Where the transporting of 2000 lbs. on 24" load centers is a prime requirement, the installation of the additional optional counterweight to the standard 20 model achieves the necessary result.

The Hyster 20 with skeleton counterweight is of great importance where floor load limits exist; where elevator lifting capacities are materials handling factors; and where a high percentage of the loads are in the 1000 lb. range.

By quickly installing the additional optional counterweight to this same Hyster 20 with skeleton counterweight, lifting capacities are increased from 1300 lbs. to 2000 lbs. at 15" load centers; and increased from 1000 lbs. to 1500 lbs. at 24" load centers. This gives the owner a 2 in 1 lift truck combination.

The right Hyster 20 lift truck, with the right attachments, tools and accessories, becomes the greatest cost cutting machine in the entire field of materials handling equipment.



Why carry around extra weight?

The Hyster 20 for 1300 lbs. at 15" load centers or 1000 lbs. at 24" load centers has a skeleton counterweight that reduces the weight of the standard Model 20 by 600 lbs. This light weight but heavy duty fork lift truck will cut maintenance and operating costs; yet it will provide the maximum lifting and transporting capacities required in a great many industries.

The additional optional counterweights can be installed in less than 30 minutes; removed in much less time.

See your Hyster dealer for further information.

HYSTER COMPANY
5301 Pacific Blvd.
Huntington Park, Calif.
Phone: Logan 3291

HYSTER COMPANY
4445 Third St.
San Francisco 24, Calif.
Phone: Mission 8-0680

HYSTER COMPANY
753 Ninth Ave., North
Seattle 9, Wash.
Phone: Elliott 2401

HYSTER SALES COMPANY
2105 S.E. 7th & Lincoln
Portland, Ore.
Phone: East 7136 - East 6754



CALENDAR OF MEETINGS



Oct. 18—California Manufacturers Assn. at Ambassador Hotel, Los Angeles. Contact Harry C. Schenck, Exec. V. P., 315 W. 9th St., Los Angeles.

Oct. 22-26—American Mining Congress Convention, Metal and Non-metallic Mineral Mining, at Biltmore Hotel, Los Angeles. Field trips Oct. 25-26. Contact American Mining Congress, Ring Building, Washington 6, D. C., Julian D. Conover, Secretary.

October 24 - 26 — California Section American Water Works Assn. at San Francisco. Contact A. R. Houseman, 907 Monadnock Bldg., San Francisco.

Oct. 31—American Society for Testing Materials and National Assn. of Corrosion Engineers, joint meeting on corrosion testing and engineering. Engineers' Club, San Francisco. Contact Theodore P. Dresser, Jr., c/o Abbott A. Hanks, Inc., San Francisco, Calif.

Nov. 1-3—Annual Conference of Pacific Northwest Personnel Management Association, at Multnomah Hotel, Portland, Ore. Contact Wallace Burch, Personnel Manager, Weyerhaeuser Timber Company, Longview, Wash.

Nov. 1-3—28th Annual Convention, California Fertilizer Assn., at Hotel Californian, Fresno, Calif. Contact Sidney H. Bierly, Exec. Sec'y. and Mgr. of the Assn., 4700 District Blvd., Los Angeles, Calif.

Nov. 8—American Society for Testing Materials, at Rodger Young Auditorium, 936 West Washington Blvd., Los Angeles. Joint meeting with several Southern California sections, on corrosion testing and engineering. Contact E. O. Slater, Smith-Emery Co., 920 Santee St., Los Angeles.

Nov. 9—American Iron & Steel Institute, in San Francisco. Contact Frank Ragland, 350 Fifth Ave., New York City, N. Y.

Nov. 12-13—Meeting of Western States Council at St. Francis Hotel in San Francisco. Contact G. L. Fox, S. F. Chamber of Commerce, 333 Pine St., San Francisco.

Nov. 14—Industrial Development Conference, Sacramento, at Sacramento State College. Sponsored by Sacramento Chamber of Commerce and other organizations.

Nov. 15-16—Association of Food Industry Sanitarians, Wilton Hotel, Long Beach, Calif. Contact James B. Robinson, pres., 1951 6th St., Berkeley, Calif.

IN OUR MAILBOX

. . . Continued from page 31

should be located on power and other utility grids; they must, of course, have an adequate and reliable supply of water; waste and sewage disposal facilities must be available; the "deployment" is expected to be confined to each local marketing area, as "no region of the country is to be built up at the expense of another," and must have access to adequate manpower.

This all sounds very good, but is not so easy to accomplish. Fortunately, the City of Los Angeles has distributed its industrial zoning quite extensively through our 454 sq. mi. of area and without too great a concentration at any point except at the harbor, which is a natural target in itself. The only concentration or clustering of plants into a locality to present an economical target to the enemy is located outside of the City of Los Angeles.

Certainly it is high time that our cities recognize that industry provides the payrolls which constitute the economic lifeblood of the community. Proper planning and proper preservation of the plan are essential.

My best wishes for the continuance of your worthy missionary work.

O. K. BUCK, Manager
Industrial Business
Business Agent's Division
Department of Water and
Power, City of Los Angeles.

(The August editorial referred to discusses a situation in Contra Costa County, California, where a residential subdivision was suddenly projected into an area long reserved for industry, making future industrial development in the area hazardous.)

Two-legged or Four-legged Varmints?

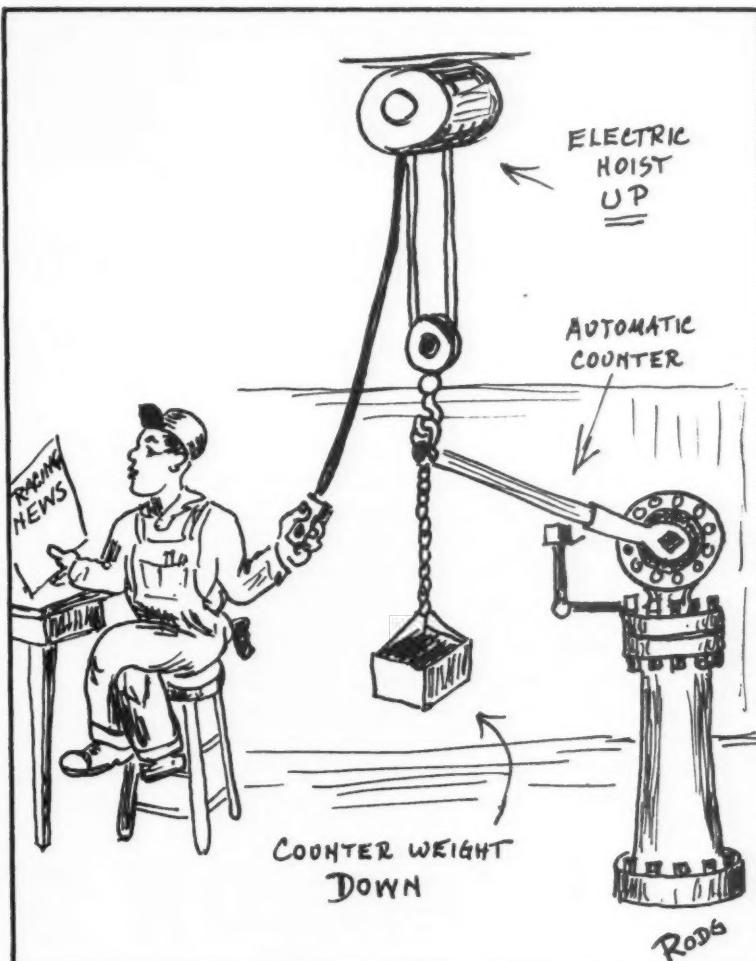
Editor, *Western Industry*:

Someone is putting out a plastic tubing and hose (black) guaranteed for 10 years against varmints, etc. Who, please?

H. A. BROWNING
Browning Lumber Company
Anaheim, California

(We referred the inquirer to several manufacturers, but were unable to inform him if varmints could read the guarantees.)

Western Waggery by Rodg



GENIUS AT WORK (and the boss felt sorry when he asked Pete to test the lever through 5,000 operations!)



Working Day and Night to Serve You

Here at Ryerson we're making an all-out effort to ease your steel-buying problems as much as possible.

No, we can't deliver all the steels you may need. Critical shortages growing out of the international situation prevent that. But what we can do—what we *are* doing is working shoulder-to-shoulder to see that you get every *available* item required as quickly as we can get it to you.

In spite of unbalanced stocks, we still have fairly good overall tonnage on hand. And the services of our experienced specialists may prove highly valuable in determining alternates, when the steels you need aren't readily available.

So for any kind of steel—any time—contact your nearby Ryerson plant. You can be sure we'll do our level best to take care of you.

PRINCIPAL PRODUCTS

CARBON STEEL BARS—Hot rolled and cold finished

STRUCTURALS—Channels, angles, beams, etc.

PLATES—Many types including Inland 4-Way Safety Plate

SHEETS—Hot and cold rolled, many types and coatings

TUBING—Seamless and welded, mechanical and boiler tubes

ALLOYS—Hot rolled, cold finished, heat treated

STAINLESS—Allegheny bars, plates, sheets, tubes, etc.

REINFORCING—Bars and accessories, spirals, wire mesh

BABBITT—Glyco bearing metal, also Ryertex plastic bearings

MACHINERY & TOOLS—For metal fabrication

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC.

LOS ANGELES PLANT: Box 3817, Los Angeles 54. Plant: 4310 E. Bandini Blvd. Phone: ANgelus 2-6141. From San Diego (No toll) Phone: ZEnith 6666.
SAN FRANCISCO PLANT: Box 188, Emeryville. Plant: 65th & Hollis Sts. Phones: OLYmpic 3-2933, ENterprise 10176.

OCTOBER, 1951

PROTOTYPES CAN COST LESS

*... if imagination takes the place
of dollars!*

PROTOTYPES of new products frequently present serious tooling problems for manufacturers in many industries.

Each should be as good in every respect as a proposed production replica, if it is to be satisfactorily production-tested; yet it must be fabricated without the best types of special production tools, since the latter are extremely expensive and might be scrapped if the design of the prototype is not perfect from the start.

One-tenth the Cost

Where it is possible to fabricate prototype parts with standardized tools, costs can be minimized by good craftsmanship; but where the use of special molds or dies is unavoidable, prototype expenditures may easily attain astronomical proportions. For example, Howard Hughes has reportedly spent more than \$15 million constructing the prototype of his giant Hercules flying boat—which, if necessary, could be mass-produced at a cost of less than \$1 million per airplane.

However, engineers at Electrical Mechanical Development Company of Los Angeles have provided substantial evidence to prove that imagination can be an excellent substitute for dollars in the fabrication of a prototype

—regardless of whether special tooling is essential.

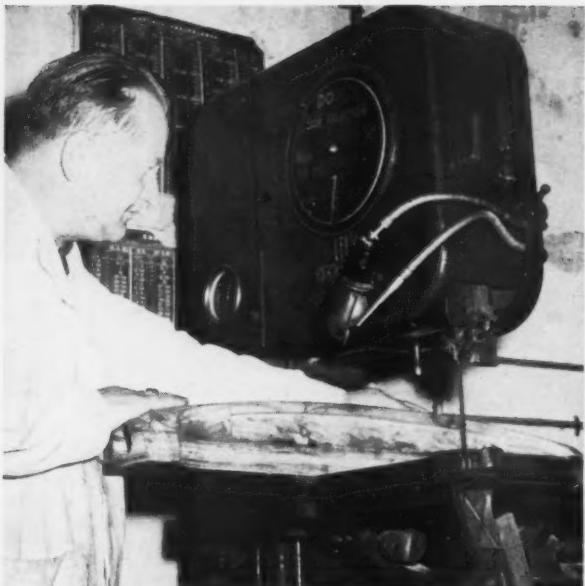
For example, when it was recently necessary to construct the prototype for a new-type washing machine, they worked out an unusual method of using wood dies in place of "temporary" metal stamping dies and consequently reduced an estimated \$45,000 prototype expenditure to an actual cost of about \$4,000.

The wood dies were made directly without special patterns by shaping, planing, sawing, turning, and otherwise fabricating both hard and soft wood materials to produce tooling components; and by assembling the latter components as male and female mates with phenolic-resin adhesives of the type used in laminating plywood.

Adhesives for the wood-die assemblies were, incidentally, "cold cured"

MATED cast-alloy dies (lower left and lower right) were used to form integral blades in spun-metal compressor disc.





PROFITABLE PROTOTYPE POINTERS . . .

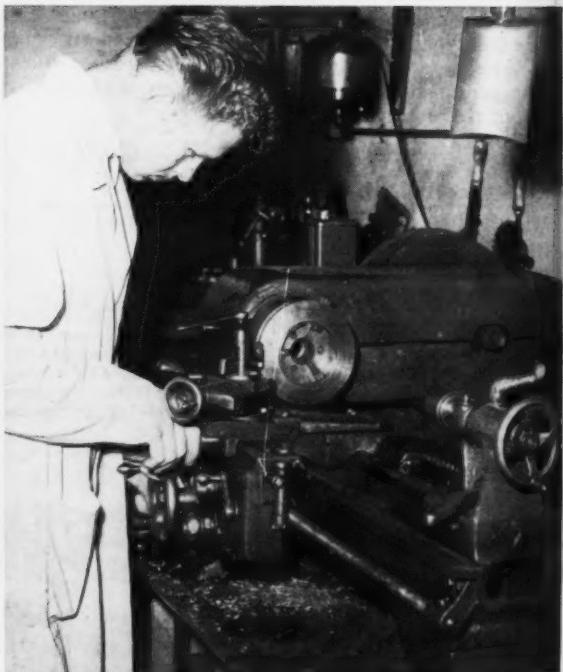
ABOVE—Power saws and other standardized machine tools facilitate rapid forming of inexpensive wood tools for prototype fabrication work.

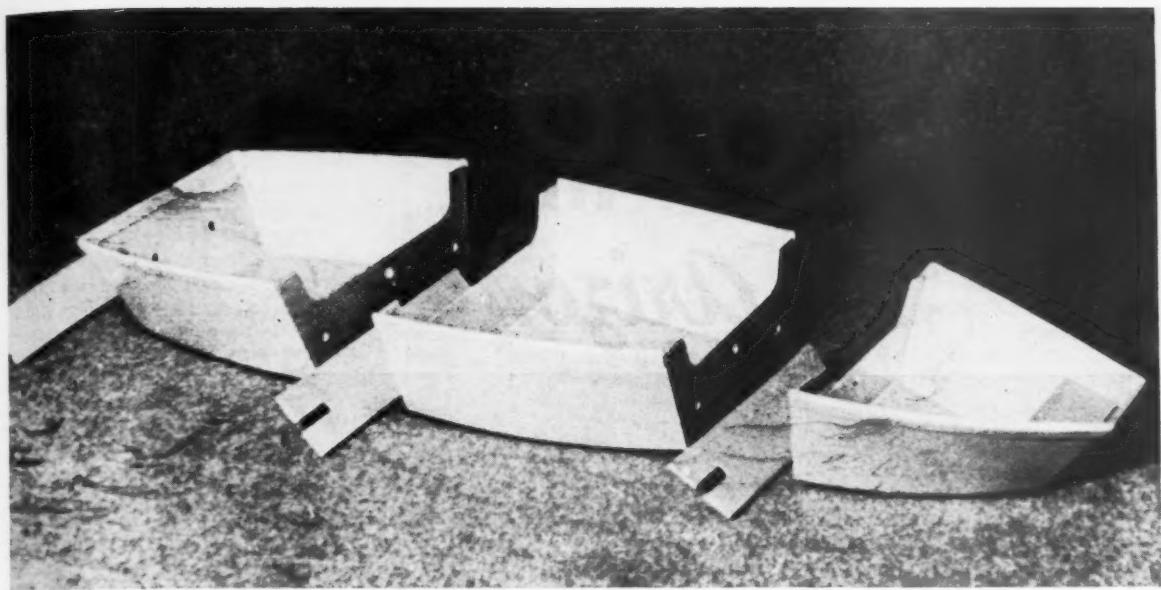
ABOVE RIGHT—In making a lighting fixture, sledge-hammer is used to apply forming blows to a metal sheet which is sandwiched between two inexpensive wood dies. Metal bar on male die prevents splintering.

RIGHT—After being formed, lighting fixture is removed from the wood die cavity.

BELOW—Cast-plaster dies facilitate vacuum-forming of prototype parts from preheated thermoplastic sheet.

BELOW RIGHT—Where it is possible to use metal-spinning equipment, as illustrated, fabrication of special tooling is avoided.





without machine tools by using nails to apply pressure and to maintain the alignment of the wood-die components.

Purpose of the dies was to stamp the sheet-metal housings for prototype washing machines; and, as indicated by accompanying illustrations, wood dies have since been used for many similar purposes with consistently good results.

One-tenth the Time

In many cases, the wood dies have been completely fabricated and readied for use in a period of only 24 hours, whereas the least expensive cast alloy tools could not have been prepared in less than two weeks.

It was feared at first that wood dies would be unusually susceptible to damage, due to a lack of surface hardness, in the forming of sheet metals. However, experience has shown that as many as six identical prototype parts can be made with a single pair of wood dies if:

(1) The die assemblies are carefully sanded to remove surface irregularities, such as sharp corners, which are most susceptible to damage.

(2) The die surfaces are sealed with a fast-drying lacquer coating, and lubricated with grease so as to minimize the effects of friction.

(3) Metal reinforcements are used to prevent splintering of the dies where forming blows must be utilized.

Wood dies are used like mated metal tools; and forming has been done with static loads and hydraulic forces as well as with the manual hammer blows indicated in an accompanying illustration.

COMPONENTS of an aluminum-alloy rowboat, which can be rapidly bolt-assembled or dis-assembled for transportation in the luggage compartment of an automobile. Prototypes for the deep-drawn compartments were stamped with inexpensive wood dies.

Where prototype tests have indicated a need for engineering changes in the design of a product, wood dies have frequently been altered so that no new tools were required to fabricate new prototype parts; and, in many circumstances, wood dies have been used as patterns for the construction of production tools after prototypes were successfully tested.

Materials Fit Circumstances

In addition to wood dies, Electrical Mechanical engineers have found it possible to make use of metals, plaster, and other materials for the fabrication of prototype tooling in various circumstances. For instance, where it was necessary to deep-draw sheet stock in the fabrication of housings with bas-relief numerals for clocks, mated metal tools were readily fabricated as follows:

(1) Two steel plates were routed to produce discs with the desired inside diameter and shape of the face of the clock housing.

(2) Numerals were scribed, as required by the housings, on one of the discs.

(3) The latter disc was routed internally along the lines of the numerals scribed thereon.

(4) Materials routed from the scribed disc (or female unit) were manually riveted to one side of the mating disc, during which process the

female unit was used as a pattern by clamping it to the mating tool.

(5) The two discs were center-drilled and mounted on cylindrical metal bases for press-drawing operations.

Similarly, where it was necessary to form integral compressor blades on spun aluminum-alloy discs, inexpensive metal tools were satisfactorily made as follows:

(1) A tool-steel cutter with the inner dimensions and shape of each blade was machine fabricated in a conventional manner.

(2) The cutter was mounted on a suitable cast-alloy base which had dowels for locational purposes, so that it could be used as a male cutting and forming die.

(3) The male die was shielded with a refractory coating, which had the thickness of the materials to be fabricated therewith.

(4) The refractory-coated die was used as a pattern on which a mating female die was cast.

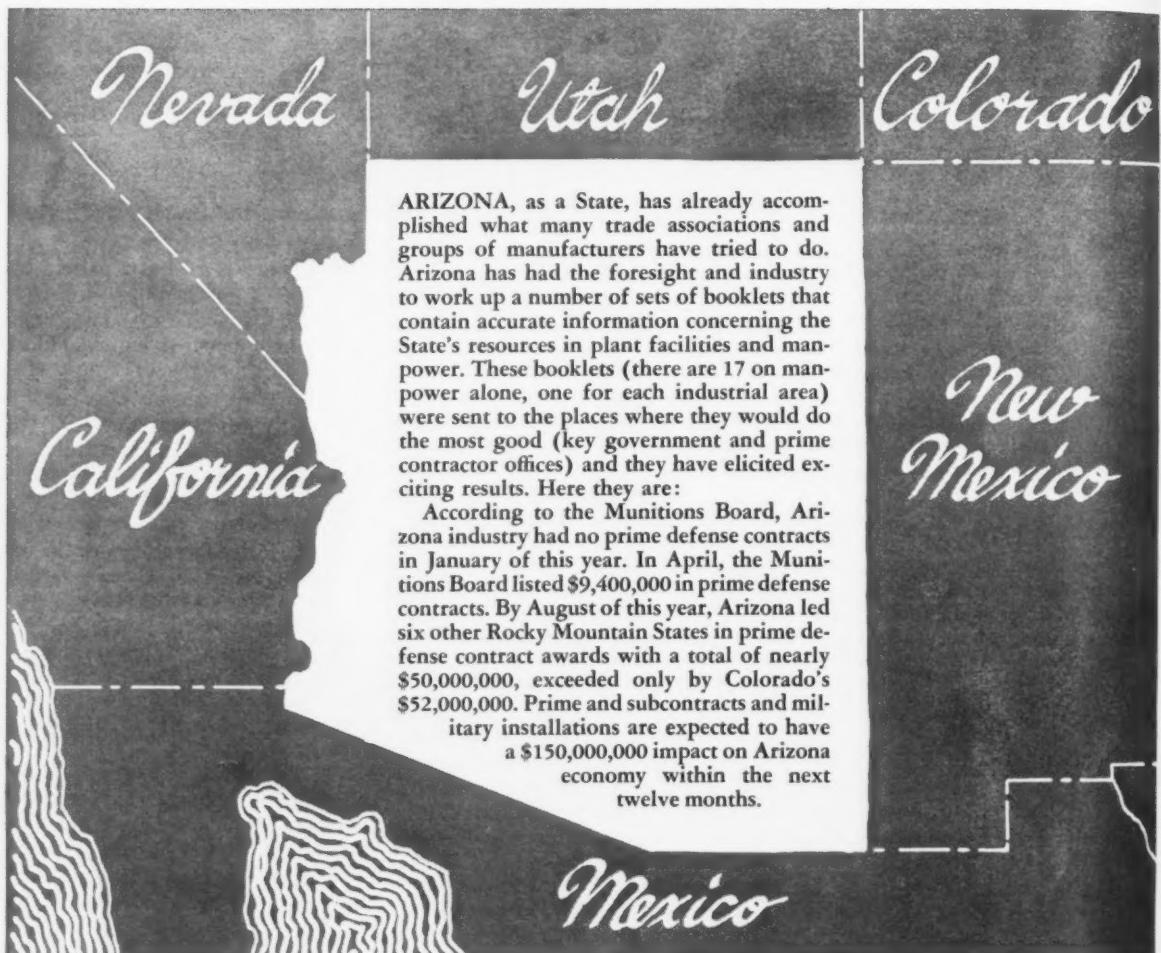
Plaster molds, cast on inexpensive wax patterns and sealed with clear lacquer, have made it possible to fabricate globe-like prototype parts with clear thermoplastic materials by:

(1) Heat-softening the plastic-sheet materials.

(2) Clamping each sheet over a mold cavity.

(3) Evacuating air from the mold via an aperture in the bottom of the mold cavity, so that atmospheric pressure would cause each heat-softened plastic sheet to assume the desired cavity contours prior to cooling.

"A" is for ACTION in *Arizona*



ARIZONA, as a State, has already accomplished what many trade associations and groups of manufacturers have tried to do. Arizona has had the foresight and industry to work up a number of sets of booklets that contain accurate information concerning the State's resources in plant facilities and manpower. These booklets (there are 17 on manpower alone, one for each industrial area) were sent to the places where they would do the most good (key government and prime contractor offices) and they have elicited exciting results. Here they are:

According to the Munitions Board, Arizona industry had no prime defense contracts in January of this year. In April, the Munitions Board listed \$9,400,000 in prime defense contracts. By August of this year, Arizona led six other Rocky Mountain States in prime defense contract awards with a total of nearly \$50,000,000, exceeded only by Colorado's \$52,000,000. Prime and subcontracts and military installations are expected to have a \$150,000,000 impact on Arizona economy within the next twelve months.

THIS VOLUNTARY, state-wide community-level inventory of production facilities in Arizona was compiled jointly by the Arizona State Employment Service, chambers of commerce in Phoenix, Tucson, Douglas, Mesa, and other cities, and Greater Arizona, Inc., a State-wide civic improvement association.

Volumes of the survey were distributed in January of this year to 400 procurement and production planning officials of government and private in-

dstry. Since the initial survey it was deemed advisable to prepare supplements to accommodate those business firms not included in the original.

This unique, comprehensive plant capacity analysis contains detailed information on individual shops, factories and businesses, listing their location, products made, production volume, raw materials used, tools and equipment on hand, size and type of present construction, expansion space, utilities, transportation facilities, and

other information essential to production-planning authorities.

The complete survey is being hailed by procurement agents as one of the most extensive, specific and practical industrial guides assembled for the use of procurement and production-planning technicians.

Groups that cooperated in Arizona have designed an approach to maximum utilization of production facilities which is becoming a national pattern. Their program has been com-

mended by the Defense Production Administration, the National Security Resources Board, the Department of Defense, numerous procurement officials, Production Planning Boards, and by important private industry production chiefs. The usefulness and acceptability of the material is further indicated by letters of reply received by the State Employment Service.

An indispensable corollary of the Plant Facility Survey is the manpower study, "Unused Human Resources," a detailed analysis of over 19,000 work applications which were on file with the Arizona State Employment Service in April 1950. This monumental study was fully completed and published by the Employment Service in September 1950 and validated by further review in February 1951.

The complete study comprises separate analyses for each of the State's 16 major labor market areas, and an over-all state survey. The 17-volume manpower study is an invaluable guide to assaying Arizona's manpower resources, presenting an unparalleled panorama of the worker-composition of Arizona's major labor market areas.

Compiled to reflect age, veteran status, education, marital status, sex, occupation, additional occupations, handicaps, continued claim status, and length of time in seeking work through the State Employment Service, the manpower study has been acclaimed by Government procurement and planning officials, labor leaders, chambers of commerce, veterans groups, Employment Security officials, and State business leaders as a major contribution to an effective approach to problems of manpower utilization.

An Emphatic Underscore

With the increasing importance of manpower in defense contract considerations the Arizona State Employment Service is now preparing to distribute a quarterly compilation of labor supply information in selected occupations and industries.

Unity of support of Arizona's production development program was emphatically underscored by the cooperating action of Arizona's Governor Howard Pyle, who wrote appropriately related letters to approximately 400 of the same addresses to whom the plant facility survey packets were originally mailed. This "second impact" letter from the state's chief executive served to stimulate interest further in Arizona's available production facilities and assure state-wide cooperation in suitably utilizing those resources.

In consideration of the national policy of bringing the work to the worker,

Arizona presents an ample and diversified labor pool which should increase opportunity locally for contracts. Further, the President's recent declaration of dispersing industry for security purposes finds Arizona in a favorable position to offer a geographically sheltered, yet convenient location for new industry or expansion of existing industry.

Capable of Butter . . . and Guns

One main objective is to provide Arizona industry with every opportunity to participate to the maximum extent in the nation's defense effort. Arizona industry is keenly interested in aiding the nation reach its production goals and is capable of making a sizeable contribution to the national effort. Through this inventory of production facilities and its distribution to appropriate procurement and production officials, local chambers of

commerce, the Arizona State Employment Service, and cooperating groups have substantially increased opportunity for the Arizona business community to achieve maximum utilization of its considerable production resources.

Arizona was recently honored by having the U. S. Department of Labor's "Employment Security Review" choose as its lead article for the June issue the contribution entitled "Arizona Plans for Butter and Guns," by Charles A. Boyle, the State's Manpower Mobilization Specialist.

Walter Bimson, chairman of the Small Business Advisory Committee of the U. S. Department of Commerce, has advised that group about the Arizona project and subsequently the committee distributed samples of the survey form developed in Arizona to all member states of the committee as a specimen of an efficient survey form.

\$1,500 FOR SIMPLIFYING HIS OWN JOB!

HOWARD H. HANNON, General Petroleum Corp. refinery stillman, was presented with a \$1500 check by GP for recommending a simplified method for taking catalyst samples from the thermofor catalytic cracking unit which the company operates at Torrance, Calif.

Hannon's suggestion called for lowering a hopper device into the catalyst elevator hopper of the "cracker" unit and securing a sample of the catalyst that is circulated inside. This eliminates the old and very difficult method formerly in use, of stopping the elevator to take samples.

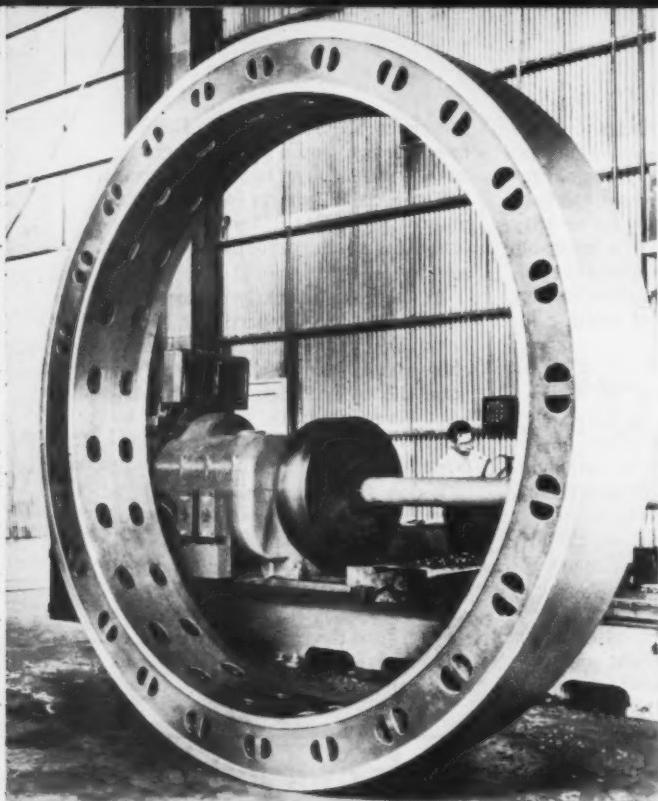
Company officials believe this device will save the firm thousands of dollars yearly in wear and tear on the elevator mechanism caused by frequent stopping and starting, not to mention the economies resulting from elimination of the non-productive by-pass time involved in the old method of sampling.

Even if no dollar saving were involved, General Petroleum would probably have adopted the suggestion because it simplifies the job of unit operators, like Hannon, and yet assures more accuracy in testing the catalyst.

Hannon feels that \$1500 is really "easy money" for making his own work easier.

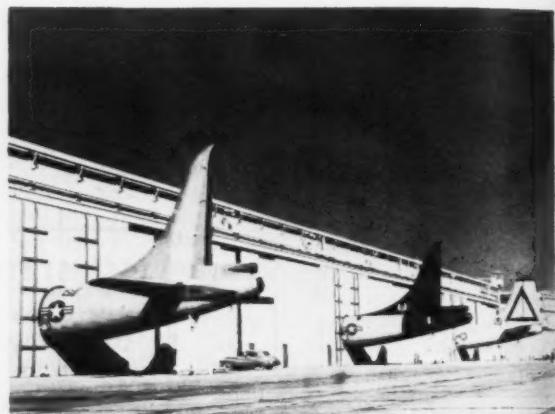


DESCRIBING his \$1,500 idea to Robert L. Minckler (left), president of General Petroleum Corporation, Hannon points out hopper device that improves efficiency of the gasoline-making catalytic "cracker" on which he works at G.P.'s Torrance refinery.



13-FOOT TIRE—only this one is for a cement kiln. It is cast in one piece of steel at National Supply Co., Torrance, Calif. This tire weighs in at 26,000 lb.; it was entirely machined at the Torrance plant. It was fabricated for California Portland Cement Co.

WESTERN PROCESSES
AND PRODUCTS
in
Today's **V**iew



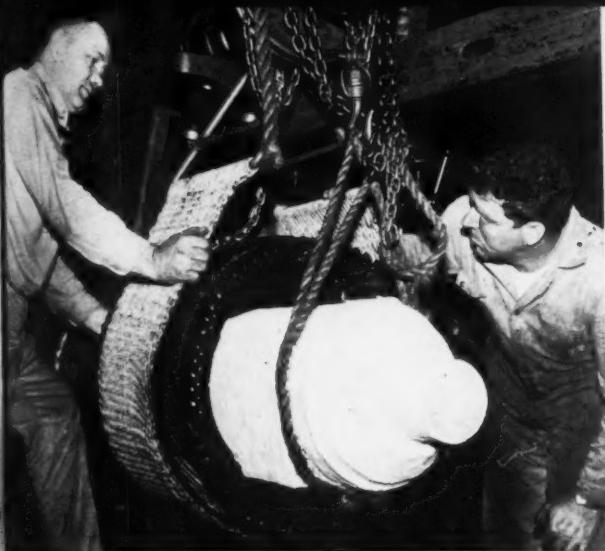
TAILS UP—and they go 47 ft. up in the air, much too high to fit inside the hangar shown. These Air Force planes, early models of the famous B-36-B's, are in process of being modernized into jet-augmented B-36-D bombers, at Consolidated-Vultee Aircraft Corp., San Diego, Calif.



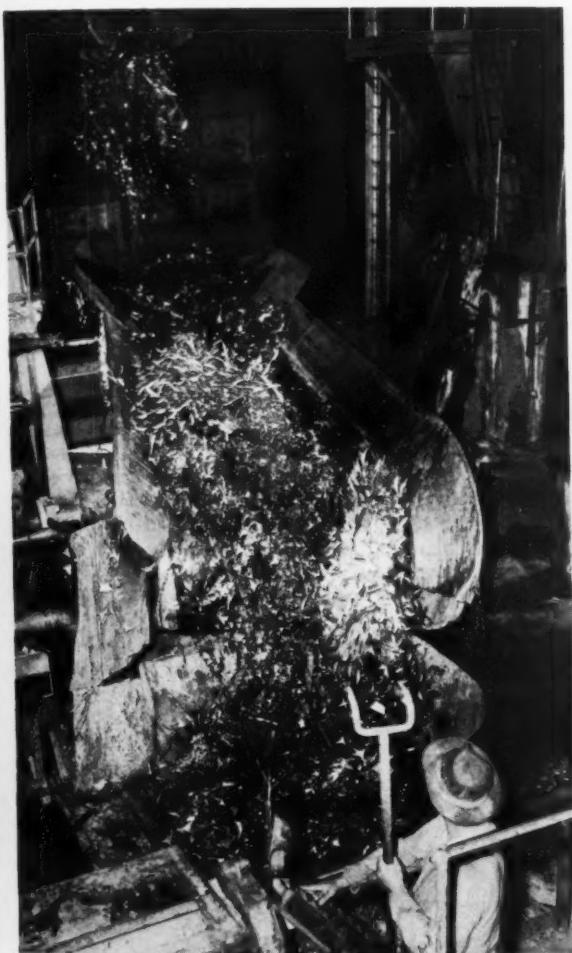
HEADS DOWN—and minds are concentrated, while nimble fingers put together these units of precision electronic equipment for the military services, at the plant of Gertsch Products, Inc., in Los Angeles. Electronics production activity thrives in this particular area.



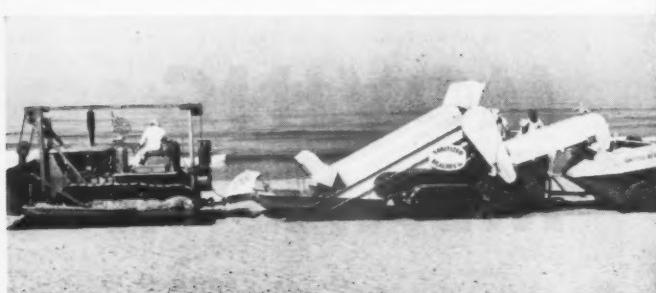
A NEW TWIST—is here being put on this 61-strand ACSR (Aluminum Cable Steel Reinforced) electrical conductor cable. Machine doing the twisting is a planetary type multistrander, at Aluminum Co. of America's new \$5,500,000 Rod, Wire, and Cable manufacturing plant at Vancouver.



COLD LOGIC—was used to slip this 2,000-lb. shaft into its armature at GE's Apparatus Service Shop, So. S. F. One night in the dry ice box and the shaft shrunk .006 in. At room temperature it will expand and make a tight fit. Part of elevator motor for San Francisco Stock Exchange Building.



RUBBER vs. STEEL—and rubber wins the battle. In 11 yrs. continuous use this 60-in. B. F. Goodrich rubber conveyor belt has carried more than 500,000 tons of deinned tinplate that would cut your hands just to pick up a handful, at Metal and Thermit Corp., South San Francisco.



MECHANICAL BEACHCOMBER—made its debut in So. Calif. last season. Made by Stephens-Adamson Mfg. Co., L. A. and Aurora, Ill., it weighs 18 tons, is drawn by a tractor. One operator processes up to 3,000 sq. yd. per hr. with almost tea-strainer thoroughness (see top photo).



THIS IS A "BRUCK"—combination passenger and freight-carrying vehicle designed and built by Kenworth Motor Truck Corp., and delivered to Great Northern Railway Co. for service between Whitefish and Kalispell in Western Montana. Carries 21 persons; freight body is 24 ft. long.



**Buckner
Manufacturing Co.
had to relocate, so they
turned it into an opportunity—**

MOVING MEANS MODERNIZATION

(Seventh article in Western Industry's plant construction series)

THINGS were running along in well-oiled fashion at Buckner Manufacturing Co., 1615 Blackstone Ave., Fresno, Calif., as they had been running for about 25 years at that same location, when the State of California decided that it would widen Blackstone Ave. What is now a

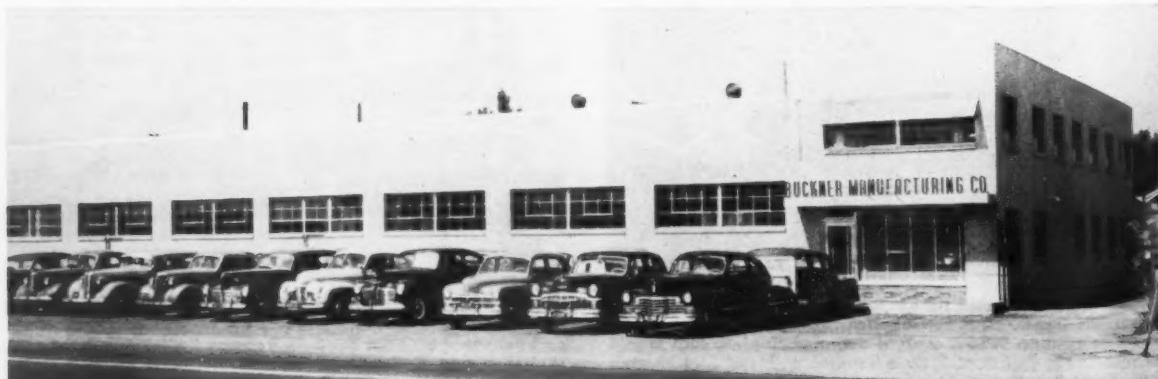
4-lane road will become a 6-lane highway, including 40 ft. of Buckner's property.

Since the plant buildings were close to the street line, only one course of action was indicated: move the plant into another location. Buckner owns the property, and enough footage to

allow building a new plant on the same spot, but a few feet away from the new street line. That was point two in this decision.

Harry Cleason, partner, who has been with the firm for 30 years or so (he joined when Buckner Mfg. Co. was about five years old), is the pres-

FRONT VIEW of the new plant (below). Plant building is all one-story construction; offices are on two levels. Referring to aerial view (top of page), present highway is to right, railroad spur at upper left provides access to main line nearby.





MAIN MANUFACTURING AREA, designed for lots of light (both artificial and natural), and elbow room. New individual motor-powered machines eliminated line shafts to make neater layout. Air conditioning keeps employees comfortable.

ent active head of the business (Buckner retired in 1941), and he had some fairly definite ideas on new plant construction, seasoned by his years in the business.

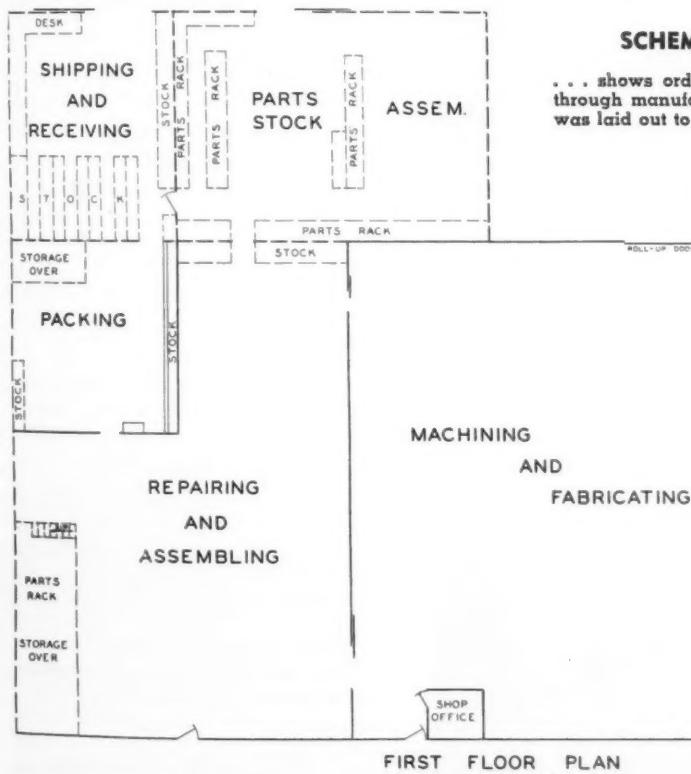
Efficient Plant, Happier Crew

For example, Cleason wanted no more belt-driven machines. They are too dangerous. He insisted on all indi-

vidually driven machines, and no more unsightly line shafts. A good drafting room was specified, so the engineers would have a light, airy, uncluttered space in which to work unhampered. Small offices were indicated, each a separate room, in contrast to the "bulldog" area of the former plant. A vault room was wanted, for valuable records. And an efficient cooling and heating

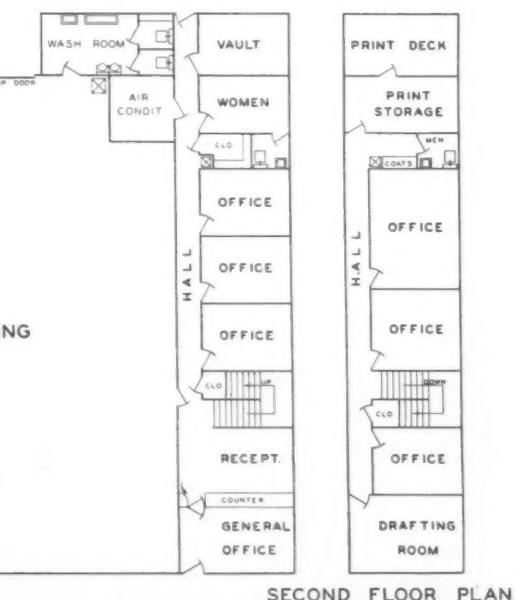
system was demanded, so that all the employees could work the year around in comfort.

With these main points in mind, Harry Cleason drew up a rough sketch of a proposed layout, and submitted it to James T. Cowan, general contractor. Mr. Cowan reviewed the plans with Cleason, discussed the project at some length with his draftsmen, and



SCHEMATIC OF FUNCTIONAL AREAS

... shows ordinary flow route of materials from raw stock through manufacturing, assembling and shipping. This plant was laid out to be efficient, and it is.



came up with a completed plan and design which Cleason approved.

Result: a new, modern building of efficient design and good eye-appeal, with a happier crew of employees and an increase of 5% to 10% in production without any visible extra effort.

Buckner Mfg. Co. manufactures and sells about 30 different models of sprinklers (from 85c to \$125.00 list) for farm irrigation, golf courses, cemeteries, parks, airfields, etc. These products are sold all over the world. While this editor was interviewing Mr. Cleason, a communication came through the office from Palestine, concerning an order then in process.

All machining, assembly, shipping,

is done in this new plant. Patterns and castings are produced at Fresno Brass Works.

Most shipping from the new plant is done by truck, even though a railroad spur bounds the plant property. Suitable truck loading and unloading facilities are incorporated in the new plant construction.

BUILDING FEATURES . . .

WALLS

Exterior walls are of reinforced Basalite blocks, affording good insulation. Interior walls are conventional lath and plaster (USG). All shop floor areas are 4-in. reinforced cement, with

hardener applied. Office floors are cement finished off with Class C matico asphalt tile. Second deck floors are wood, $\frac{5}{8}$ -in. plyscore, felt, and asphalt tile.

ROOF

Roof is composed of two layers of 15-lb. felt mopped solid, and 90-lb. mineral cap sheet covered. This composition roof is laid on 1 x 6 wood sheathing, supported by steel trusses.

CEILINGS

Office ceilings are insulated by Fiberglas blanket applied over the entire area.

Sound-deadening is applied only in the downstairs hall and general office area.

FOUNDATION

Foundation is reinforced concrete (Calaveras cement). Exterior walls are all 24 in. wide, 18 in. deep, "T" footing style with an 8-in. stub wall. Cement mix is 1 to 6. Reinforcement consists of three $\frac{5}{8}$ -in. bars spaced 6 in. on centers across the floor.

SASH

Sash is all steel, industrial, burglar-proof. (Security.) L.O.F. glass throughout.

LIGHTING

Lighting accomplished by Slimlines (All Brite) to supply 35 foot candles at working height.

AIR CONDITIONING

Office areas are completely air conditioned by a Servel 5-ton unit with humidity control.

HEATING & VENTILATION

Shop areas are heated by ceiling suspended Reznor radiators; cooled by 8,000 cfm. Utility coolers. Shop areas are ventilated by two 16-in. Allen rotary ventilators set in the ceiling.

PLUMBING

All plumbing fixtures are Standard, with the exception of two General Electric automatic drinking fountains.

FIRE PROTECTION

Fire protection consists of hose reels and chemical extinguishers throughout the plant. Buckner has a hydrant and well pump right on the property, in addition to city water access.

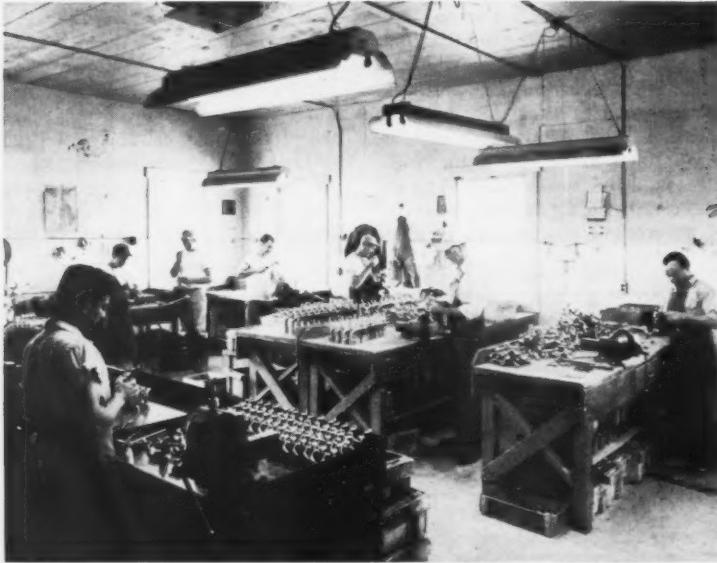
Vault is protected by a two-hour Moser fire door. Walls and ceiling are of reinforced concrete.

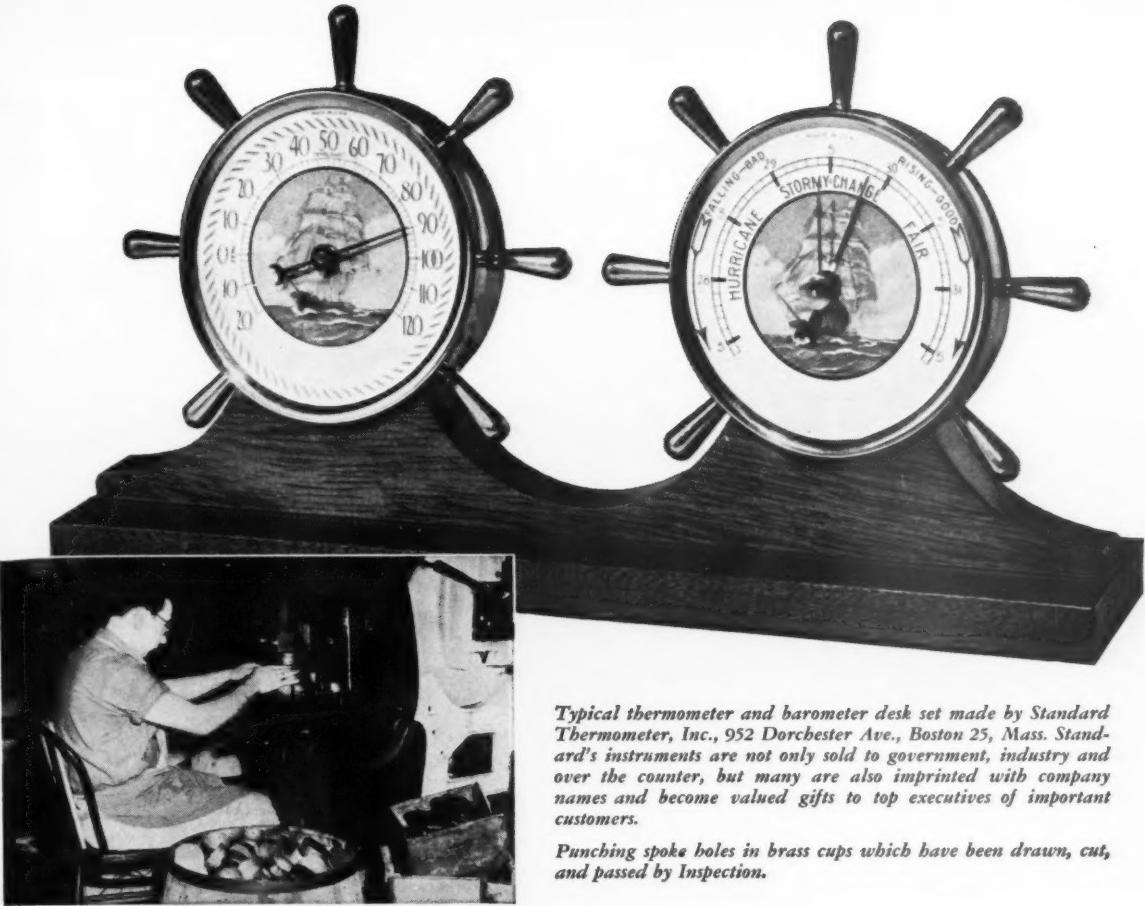
PARKING

Parking facilities are provided for 35-40 cars.

TOP—Assembly room view. This area is still in process of modernization. It is part of the old plant buildings, not yet replaced by new construction.

BOTTOM—One end of shipping room. Buckner sprinklers are sent all over the world, and are used on grounds around airports, industrial plants, golf courses, etc.





Typical thermometer and barometer desk set made by Standard Thermometer, Inc., 952 Dorchester Ave., Boston 25, Mass. Standard's instruments are not only sold to government, industry and over the counter, but many are also imprinted with company names and become valued gifts to top executives of important customers.

Punching spoke holes in brass cups which have been drawn, cut, and passed by Inspection.

TO MEASURE TIME AND WEATHER BEGIN WITH THE BRASS

Standard Thermometer, Inc., is a well-known maker of thermometers, barometers, hygrometers, and clocks, for outdoor, desk, and industrial use. Naturally, brass is an important item in these instruments, being used for cases because of its golden beauty and for operating parts because of its reliable physical characteristics, including corrosion resistance.

Fabrication methods include stamping and drawing of cases and bezels. The company is an old and experienced one, dating back to 1885, and has been a Revere customer since that time. Recently it began to experience certain fabrication difficulties. When Revere heard about them, the Technical Advisory Service was asked to look into the matter. The brass being used was analyzed, and factory tools and methods studied. An elaborate 17-page report was prepared, including photographs of micro-sections to show the grain structure of various samples, and detailed recommendations were made. In general, it was found that such things as pockers, orange peel, and flare were due to a combination of factors, including composition of the brass, its temper, the dies, and the lubricant

used on them. Standards were set up for metal specification and though Revere does not design dies, suggestions were made for the consideration of the designers.

After digesting the report and putting the recommendations to the proof, Standard wrote: "We are extremely grateful for this information, and it represents a splendid job and one of great value to us."

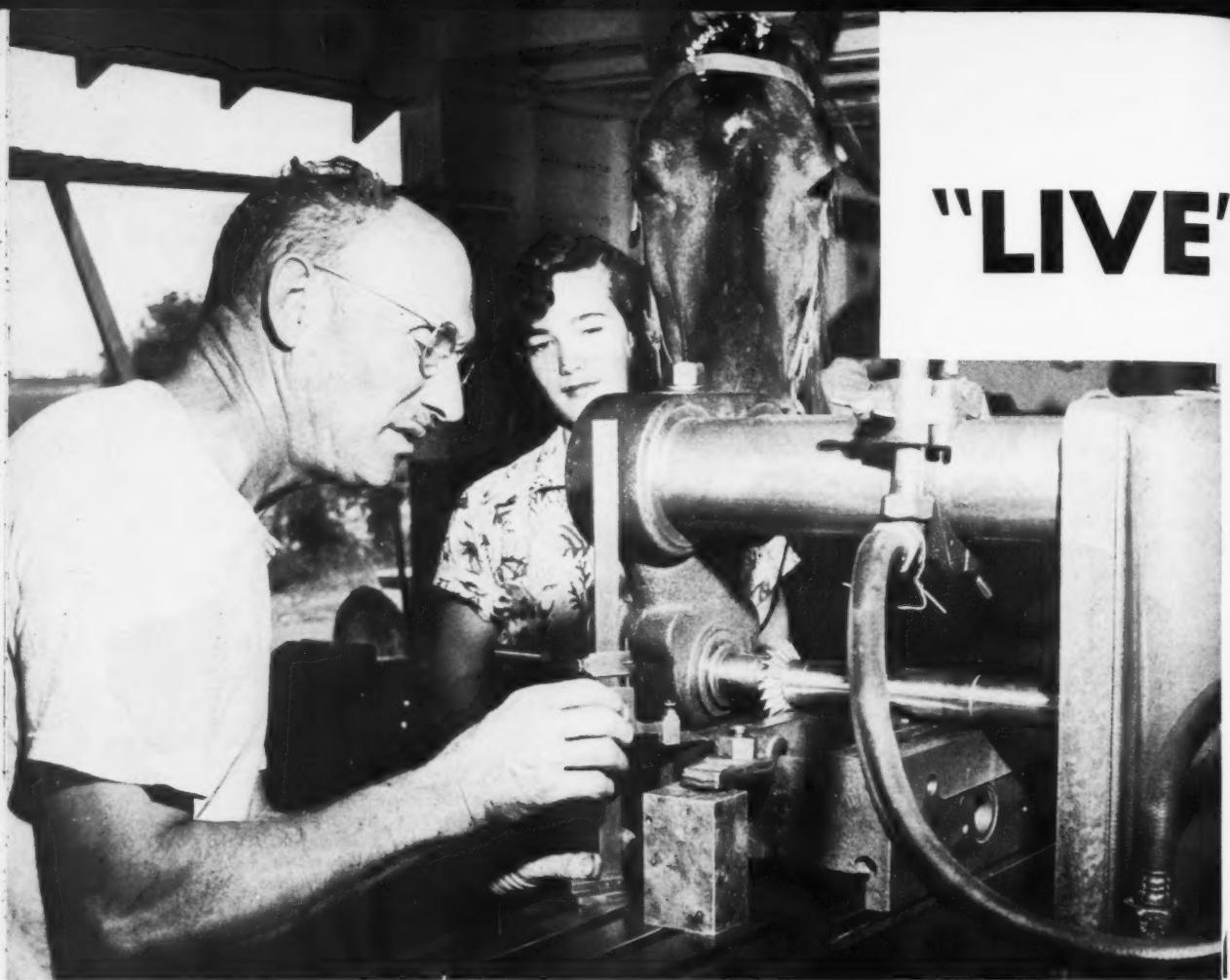
Perhaps Revere can work with you too on such matters as specification, fabrication, ideas to save precious metal. Our collaboration is freely given.

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"LIVE"



YES, that's a saddle horse that Linda Gower brought right into the shop to see how father Gower is doing at the milling machine with the latest job from some aircraft contractor further south. Horseback riding is lots more fun than bucking traffic every day.

ONLY A STEP FROM THIS . . .

GOWER RIDES the tractor cultivating his 52 acres of cotton surrounding his shop. Diversified occupation doesn't hurt the boss.

TO THIS . . .

BACK IN THE SHOP again, he checks a lathe job on which Allen Engman is working, to see that it will satisfy the customer.



while you WORK!

Why work to live? Here's a classic example of a typically Western idea — that it's possible to live a more enjoyable, full life even while you work

ONE of the most fundamental of Western concepts is the philosophy of living while you work, rather than working to live. More and more Western businessmen are making it possible for their employees—and themselves—to live a more enjoyable, comfortable, full life while they toil.

A classic example of this philosophy is exemplified in the Gower Manufacturing Co., Madera, Calif., formerly of Burbank. A. L. Gower, who used to do business in a big city in the south, became tired of the hustle and bustle, the unpure air, the incessant drive, the high prices, the many irritating factors that make up an industrialist's life in a busy area.

Gower Manufacturing Co. produces, among other things, countersinks for rivets for Southern California aircraft plants. Mr. Gower doesn't make quite so much money now (he doesn't turn out so many units, either) but he is a lot more contented and happy with a work force of five in Madera than he was with 25 in the city. And when he wants to knock off for a while, he goes fishing in the river that runs past his door.

You CAN Miss It

We phoned him from Fresno, to get directions to his place. Here are the directions he gave us (compare them with any address you know in any city):

"Go north on U. S. 99 out of Fresno for about ten miles, till you cross the



LOOKS LIKE any of the thousands of San Joaquin Valley farms, but these buildings house an amazing quantity of and quality of first-class machine shop equipment, turning out work that meets aircraft standards.

bridge over the San Joaquin River . . . you come to a little brown house at the crossroad. Turn south right there, go on past the next crossover, and you will come to a big mailbox on the west side of the road with my name on it. Turn in to my property right opposite the mailbox and drive in. You can't miss it. You'll find me right here."

We did that, but we also nearly missed it. Who would ever expect to find a manufacturing plant in the middle of a cotton ranch?

We drove into what looked just like a conventional barnyard. Garage, house, barn, chicken house, tractors, truck, etc., around the property. Nothing unusual — except that through the garage door, slightly ajar, we could see a Rivett grinder and hear sounds that unmistakably revealed a machine shop.

A Saddle on the Milling Machine

Inside the garage we met Mr. Gower, and took a plant tour. What surprised us most was the quality—and quantity—of machine tools and inspection equipment there. From the Pratt and Whitney Supermicrometer, the Johanssen Gage Blocks, the Wilson Rockwell tester, right down to the unused Brown & Sharpe milling machine (not hooked up yet—has a riding saddle on it so the children can play horsie) in the barn, this small plant is really equipped.

Tools listed are of course only the major pieces of equipment. A host of other items, such as Landis and Geometric self-opening die heads (three sizes of Landis and a complete set of chasers), Hardinge collets, chucks, etc., are found in the many cabinets around the shop.

A separate room houses the inspection equipment listed, plus other items such as height gages, indicators, etc.

A Geo. T. Schmidt Hi-Duty marking machine is used to stamp the finished countersinks before shipment.

This shop is in a building originally intended for a garage, to which was added an extension for implement storage.

"I'd like to have you meet Mrs. Gower," said this manufacturer, as he led us out the shop side door and we headed for the chicken house. "We do all our assembling in here," he explained, "and she's in charge of the whole operation."

Inside the chicken house there was

MRS. GOWER lends a hand at the grinding machine. Her keen eye also is as careful on inspection as any consignee's.



nary a bird to be found. The place had been completely gutted, shelves and benches installed, and assembly of countersinks was in process. Mrs. Gower, pleasant and gracious as she is, is nevertheless probably as particular an inspector of the firm's products as are the consignees. There was no sense of stepped-up tempo or rush, even though orders were piled up. "Accuracy and quality," they insisted, "are far more important than quantity."

As we came out the door of the "assembly shop," we peeked in the barn door. Bars of steel—lots of them—classified and stored, various machine tools, and other components of a machine shop contrasted dramatically with the horse stalls, hay, and saddle on the B. & S. mill.

Nature Is a Sideline

As a sideline, Mr. Gower farms 52 acres of his 70-acre property to cotton. Balance of the land is pasture, where lives a saddle horse when not in use. Two employees work the ranch; five persons staff the manufacturing enterprise.

Mr. Gower is happy in his work. He turns out about 500 countersinks per month, plus other miscellaneous work including hole cutters, cutters for

This Small Plant Is Really Equipped

Here is a partial list of the tools in this plant that Western livability built:

- 104 Rivett universal external-internal grinder
- 6 x 18 Landis plain grinder
- K. O. Lee cutter grinder
- Delta metal bandsaw
- Delta carbide tool grinder
- P. & H. 450-amp. arc welder
- U. S. hand mill
- Millmaster vertical mill
- Number "O" Brown & Sharpe plain mill
- Number 2 K. & T. Milwaukee universal mill, Model H, with practically all the attachments
- Oster 1½-in. bar turret lathe
- Number 2 Foster 1-in. bar turret lathe
- Number 918 Rivett turret lathe
- 9-in. South Bend lathe
- South Bend toolroom lathes, one 10 in., one 11 in., one 16 in.
- Four Delta drill presses—two 14 in., two 17 in.
- 20-kw. Acme spotwelder
- Peerless 6 x 6 hacksaw
- Davis keyseater
- Milwaukee die filer

countersinks, and miscellaneous local work. He is not bothered by the telephone, since he is on a 10-party line and communication by that method takes time.

His main industrial regret: lack of processing facilities in the area (heat treating, hardening, etc.). However, he manages to travel South about once a month, takes his work down, gets it done, and returns with it.

A Good Question

His hours are much like the conventional farmer's (sometimes till late at night), but he doesn't seem to mind it.

"I enjoy my work," says Mr. Gower, "and it brings in the money I need. Farming the cotton acreage furnishes me with a physical and mental diversion, while at the same time presenting a fair profit possibility.

"Look—I can go out in front and pick fruit off the trees, and I can go out there along the road and pick vegetables we have planted. The air is fresh and clean out here, and when I need relaxation there's always the San Joaquin River right by my own property, with lots of fish in it. What else does a man need to live? To really live?"

Come to think of it, that's a good question.

HERE, Mr. and Mrs. Gower and Linda are arranging an exhibit for the Madera County booth at the California State Fair at Sacramento, displaying samples of the various products that he makes. Countersinks are an important item, plus hole cutters and others.



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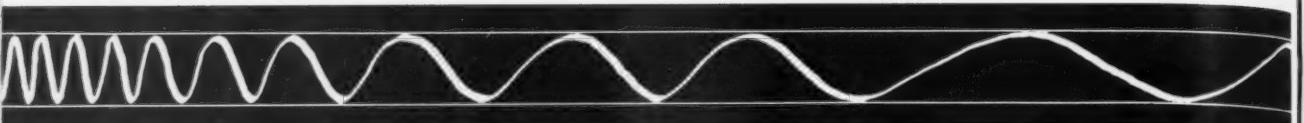
YEARS of broad experience in forgings for almost every conceivable tool, die and stainless steel application have fitted our Los Angeles Forge Plant to deal expertly with any requirements you may have in this exacting field.

Regardless of the shape or material involved, we are equipped to furnish correctly made forgings that will give you the utmost in effective performance.

Any Allegheny Ludlum field representative can give you further particulars (see list of our West Coast office locations at left). Let us quote on your regular requirements or special problems—either on forgings "as is," rough machined, or finish machined to specifications. • *Allegheny Ludlum Steel Corporation, Los Angeles Forge Division, 5333 E. Slauson Ave., Los Angeles 22, Calif.*

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ULTRASOUND sounds off!

. . . to tell you its usefulness for locating internal flaws, soldering, smog control, degreasing, welding, spraying, etc.

PRINCIPAL APPLICATIONS FOR ULTRASONIC FREQUENCIES

Frequencies (Cycles/Second)

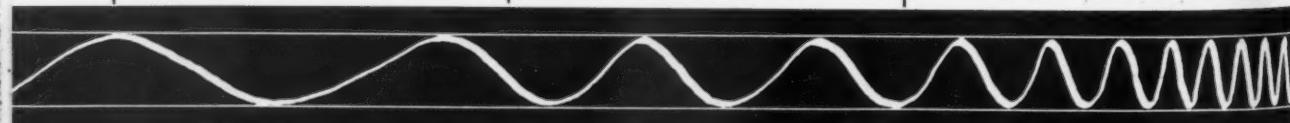
Frequencies (Cycles/Second)	Applications
18,000 to 20,000	Commonly used in the operation of sonar (submarine detection) equipment; also used like radio waves for underwater signaling, and in the operation of sound-ranging depth finders aboard seagoing vessels.
21,000 to 24,000	Used to agitate solutions (so that clothing and other articles can be washed or dry-cleaned with extreme speed), due to increased wetting action; also to "clump" or agglomerate smoke particles to prevent atmospheric pollution.
25,000 to 29,000	Used in connection with automatic controls—for example to open and close doors.
30,000 to 40,000	Will facilitate the "degassing" of molten metals, plastic casting solutions, etc., so that the latter can be cast without air-bubble defects; also, to provide agitational or cavitation effects for such unprecedented tasks as the soldering of aluminum alloy materials.
41,000 to 50,000	Used in salt-water solutions to determine the presence or absence of flaws in solid materials which are impervious to X-rays, etc.
51,000 to 100,000	Often used in atmospheric signaling and in the operation of blind-guidance devices (for the safe landing of airplanes in total darkness or heavy fog).
100,000 to 300,000	Can be used to emulsify or mix immiscible liquids, such as water and oil; also, to accelerate chemical reactions (sometimes eliminating the need for catalysts).
300,000 to 500,000	Frequently used in resonance-test work (to locate hidden flaws in materials without above-mentioned saline solution) and in certain types of chemical-process work. (Note: All ultrasounds with frequencies of 300,000 or more cycles per second are characterized by intense heating effects if generated with sufficient intensity.)
500,000 to 5,000,000	Can be used in refining oil or in processing complex organic chemicals; also, to stimulate the growth of plants and (if sufficiently intense) to eradicate insects, rodents, etc.
500,000,000	Believed to be the highest ultrasonic frequency thus far generated. Frequencies up to this level have been used in the operation of radar equipment, the broadcasting of television images, the disintegration of solids, the actuation of delicate measuring instruments, the diagnosis and treatment of diseases, etc.

SOUND WAVES: A Graphic Representation . . .

SUB-AUDIBLE SOUND—is repeated with frequency of less than ten times per second; can't be heard by humans.

AUDIBLE SOUND—is repeated with frequency of 10 to about 18,000 cycles per second; can be heard by humans.

ULTRASOUND—is repeated with frequency of more than 18,000 cycles per second; can't be heard by the human ear.



HIGH-INTENSITY SOUND—any frequency: generated with considerable energy of propagation through very large area of material.

and least-explored branch of acoustical science.

The usefulness of any sound wave or vibration is proportional to its intensity, or the energy with which it is generated, since this determines the amount of area through which the wave can be projected or propagated. But, due to the phenomena of resonance (which causes the atoms and molecules of a material substance to vibrate in the presence of sound waves with a specified frequency), sonic vibrations in the high or "inaudible" frequency range may be utilized more effectively or more efficiently than audible sounds of comparatively-great intensity for many purposes.

You Can Use It

Such inaudible sound waves are said to have a frequency of 18,000 cycles per second because each energy impulse is duplicated 18,000 or more times per second, and they can be generated with many well-known types of equipment—for example, tuning forks, whistles, friction devices, and electrical spark gaps. However, only three ultrasound generators are generically considered as industrially practical. They comprise:

(a) *Sirens*—similar to the signaling devices used by firemen. A siren can produce sounds of virtually all frequencies and intensities by breaking up a jet of air into vibrating particles with a sequence of outlet apertures.

In the one-note siren used by firemen, a blower in the siren housing creates the jet of air and teeth on the blower are normally used to break up the flow of air as it passes through a

ULTRASOUND? SUPersonic?

Growing tendency is to use word "supersonic" for exclusive reference to faster-than-sound flight. Design problem with high-speed airplanes is to create lightweight structure that will be impervious to the intense vibrations of "ultrasound."



perforated stator. This type of siren could be used to generate ultrasonic vibrations of individual frequencies and intensities by varying the number of blower teeth and outlet apertures for each unit, but most of the currently-available ultrasonic sirens have been designed for variable output frequencies and intensities.

Varied intensities are usually obtained by injecting air pressures of different values from a compressor into a siren housing, so that the air will be broken up into vibrating particles with requisite sonic frequencies as it passes through matched perforations in a stator-rotor assembly or two contra-rotating discs by regulating the operational speeds of the rotor or the contra-rotating discs.

(b) *Magnetostrictive generators*—wherein electromagnetic coils are energized with oscillating current so as

to produce vibrations as rapid dimensional variations in ferromagnetic rods, tubes, etc., due to the phenomenon of magnetostriction.

Such generators or "transducers" can produce sound waves of tremendous intensity at frequencies of less than 100,000 cycles per second, and are now used for what is perhaps a majority of practical ultrasonic applications (for example, in the operation of sonar equipment) despite their frequency limitations.

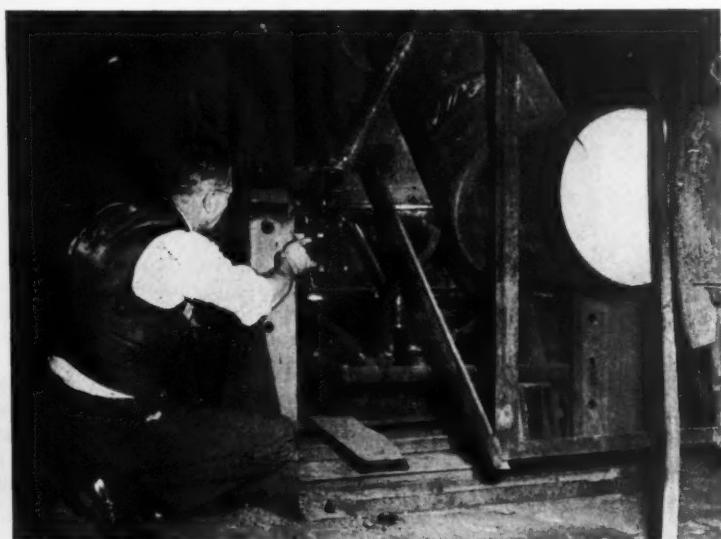
(c) *Electrostrictive generators*—wherein radio-frequency current is used to create vibrations as dimensional variations in quartz crystals and other piezoelectric elements, due to the phenomenon of electrostriction. These generators or transducers have been used to produce ultrasonic vibrations of virtually all frequencies (ranging to more than 500,000,000 cycles per second), and are consequently prominent in laboratory work with ultrasound.

However, the output intensities of electrostrictive generators were until recently limited from the practical point of view by the physical properties and dimensions of natural piezoelectric crystals. Now, thanks to the development of a special process whereby piezoelectric crystals can be fabricated as ceramics, there seems to be an excellent possibility that electrostrictive generators will become the most practical ultrasonic transducers.

Ultrasound Super-efficient

Norman Barnes of General Electric Company recently provided a striking example of the efficiency with which ultrasound may be used in a statement to the effect that a kilowatt of ultrasonic power can be concentrated in a square centimeter of space with about ten times the intensity of the energy concentrated by a white-hot tungsten lamp filament—heretofore regarded as

ULTRASONIC SIREN recently installed by G-B Brass & Aluminum Foundry, Los Angeles, to agglomerate and precipitate industrial smoke in conformity with smog-control ordinance. This was the first installation of its kind.



the most intense source of heat developed by mankind.

However, acoustical engineers in general agree that "efficiency" (as defined by classical physicists) is not the most practical criterion for evaluating ultrasound—since the latter may be used with relative "inefficiency" for numerous types of work that might not otherwise be accomplished.

Internal Flaw Detective

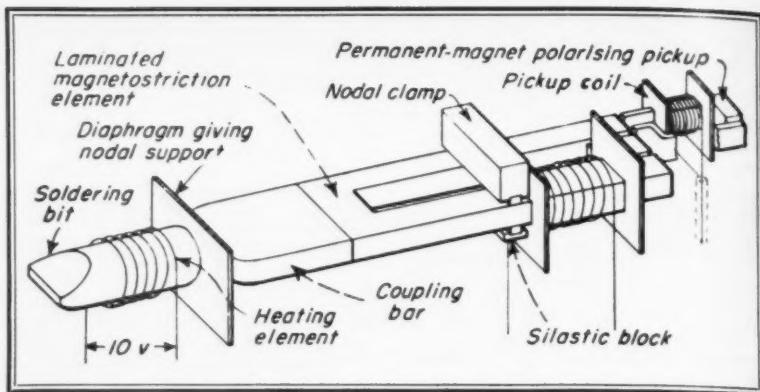
For instance, at Douglas Aircraft Company of Santa Monica, Calif., an ultrasonic reflectoscope is currently being used to locate internal flaws in materials which could not be inspected with the most modern types of X-ray equipment. Function is to:

- (1) Generate a high-frequency sound wave with the resonance value of an inspection material, so that the energy impulse will be echoed or reflected by a "secondary medium"—such as a gas pocket within the material, or a tabletop on which the material is positioned.

- (2) Amplify energy echoes or reflections, as they return to their source, so as to actuate a cathode tube (similar to the picture tube of a television set) which visually indicates the presence or absence of defects in the inspection material in accordance with the amount of time required to produce each echo.

The purpose of Douglas' reflectoscope is, by the way, to make use of a small quartz crystal as a transmitter and as a receiver of ultrasonic vibrations and reflections—size and shape of the crystal in each case being dependent on the type of inspection work that must be done.

G-B Brass & Aluminum Foundry, Inc., of Los Angeles is believed to be



ULTRASONIC SOLDERING IRON, shown in schematic detail, is now being used for such unprecedented tasks as soldering of aluminum alloys.

the first Western factory to develop an ultrasonic siren. It is now being used for the agglomeration and precipitation of industrial smoke particles in conformity with local smog-control ordinances.

Basic parts of the G-B siren—including a housing unit, a mounting ring, a stator, and a rotor—were made by sand casting high-tensile manganese bronze. The stator and rotor components are 16-in. diameter discs, each perforated 120 times with 3/16-in. diameter ports, and the rotor is mounted on the housing so that it can be belt-driven at speeds up to 12,000 rpm. with a 3 1/2 hp. electric motor.

Completely assembled, the G-B siren has a maximum length of 18 in., an optimum diameter of 17 in., and 240 pounds weight. It is normally operated with about 5 pounds of pneumatic pressure from a small paint-spray compressor at frequencies ranging from about 20,000 to 22,000 cycles per second, and it is vertically mounted so that its output will be upward into

a steel smokestack—on which collector pipes are mounted so as to recover "clumped" or agglomerated smoke particles.

A similar siren (made by Ultrasonic Corporation of Cambridge, Mass.) is now being used in connection with a shale-oil processing unit at Union Oil Company's Wilmington, Calif., refinery. Its purpose is to agglomerate and precipitate minute particles of oil, which would otherwise be lost as the result of atmospheric dispersion due to the need for high temperatures in retorting shale for the reclamation of oil.

Magnetostrictive transducers have been used rather extensively at General Sound Company of Burbank, Calif., in the development of washing machines and chemical processing equipment. Few details regarding these particular developments have yet been officially disclosed, but the principles involved are fairly well-known and can be generally summarized as follows:

(a) When ultrasonically agitated, a solution such as soapy water or a cleaning solvent has greatly-increased wetting action and may be used to wash clothing, degrease metal products, etc., with unprecedented speed.

(b) Immiscible chemicals, such as water and oil, can be rapidly and thoroughly dispersed or emulsified if processed with high-frequency sound waves.

(c) Ultrasounds with suitable resonance frequencies may be used like chemical catalysts in causing certain types of chemical reactions to take place.

(d) Cavitation effects, due to the use of ultrasonic energy, make it possible to "degas" liquid materials—such as cast alloys and plastics—so as to eliminate air bubbles or gas pockets.

A particularly interesting develop-

Continued on page 86

ULTRASONIC PROPERTIES OF MATERIALS

Substance	Velocity*	Density†	Impedance‡	Wavelength§	
				500,000 c.	1,000,000 c.
Air	0.331	0.00120	0.0000413	0.0688	0.0344
Aluminum	6.22	2.65	1.70	1.244	0.622
Phenolic Plastic	2.59	1.4	0.363	0.518	0.259
Brass	4.43	8.5	3.61	0.886	0.443
Copper	4.62	8.93	4.11	0.924	0.462
Glass	5.5	2.5-5.9	1.805	1.040	0.520
Lead	2.13	11.4	2.73	0.426	0.213
Magnesium	5.33	1.74	0.926	0.533	0.267
Mercury	1.46	13.6	1.93	0.284	0.142
Polystyrene	2.67	1.1	0.294	0.543	0.267
Quartz	5.75	2.65	1.5	1.150	0.575
Steel	5.81	7.8	4.76	1.162	0.581
Transformer Oil	1.39	0.92	0.128	0.278	0.139
Water	1.43	1.0	0.143	0.290	0.145

*Velocity statistic in terms of centimeters per second $\times 10^6$.

† Density in terms of grams per cubic centimeter.

‡ Specific acoustic impedance $\times 10^6$.

§ Wavelengths in centimeters at frequencies of 500,000 and 1,000,000 cycles per second, as indicated.

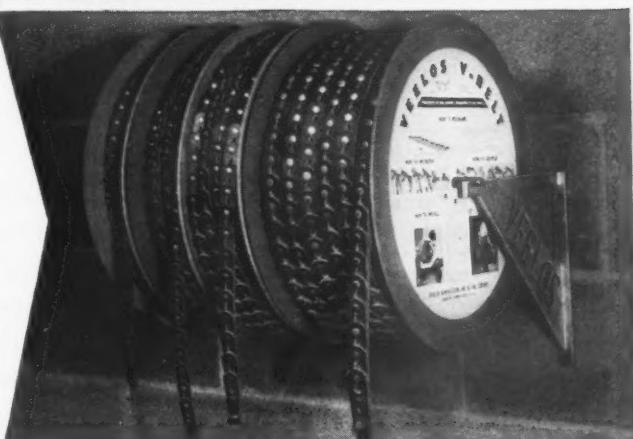
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because it takes extra dollars to keep a complete stock of different sizes of endless v-belts . . . extra dollars to provide adequate storage space . . . extra dollars to maintain an accurate inventory control . . . and extra dollars in an inventory of belts that may deteriorate before they can be put into service.



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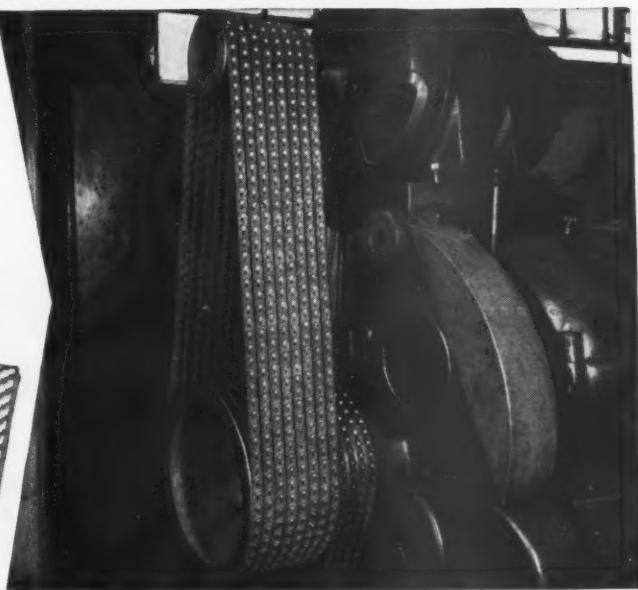
because these 4 reels of Veelos adjustable v-belt in the O, A, B and C widths will replace up to 316 sizes of endless v-belts. Veelos on reels is easy to store on the wall or floor . . . easy to control, for a glance tells you stock on hand. And Veelos holds inventory investment dollars to a minimum while providing the right size v-belt when you need it—without delay, without deterioration.



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Yes, for a good many years we've had a lot of staunch friends throughout the West. Most folks know us best as leading builders of the overhead cranes they see speeding materials back and forth in hundreds of plants.

So, we're not new here by any means — only that now we've become neighbors in manufacturing as well. We're here to serve the growing needs of western industry better than we could before — to work more closely with our friends and customers — to effect some new economies through local manufacturing — and to cut transportation costs.

Our first big job is to help in every way we can with the National Defense program. Our long-range aim is to live and grow in the bright future we envision for the industrial West. We're here to stay!

Serving the West —from the West

The new P&H Pacific Division is headquarters for a complete and separate sales and service organization handling all P&H products in the 11 Western States.

Here are maintained complete stocks of genuine P&H repair parts for all types of P&H equipment, to supply dealers, distributors and branch offices in this area.



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4604 West National Avenue
Milwaukee, Wisconsin
2400 East Imperial Highway
Los Angeles 59, California

HARNISCHFEGER
CORPORATION

THE JOB application forms, or blanks, now used by the great majority of American manufacturers have several major disadvantages:

1. They are tedious to applicants, so that many job-seekers who might prove desirable employees are likely to walk out of a personnel office rather than fill out one. This is especially true of those who have manual aptitudes, but lack ease of expression.

2. The time consumed in filling out the forms tends to cause the office to become crowded with applicants, bringing about confusion and disorder.

3. Most important, the man who is to do the hiring is unable to appraise the applicant through looking at the completed form. Job titles which describe the same kind of work often vary in different industries, and even among firms in the same industry.

In the hope of correcting the conditions described, a visual form which may be used for preliminary screening, is suggested.

Note that space is left on the form above the 100 line, and also below the zero line. Also, that the columns are not closed at tops and bottoms.

Beneath each of the columns, is a general job description, such as the following:

How VISUAL APPLICATION FORMS can aid both interviewer and applicant

A suggestion, by ARTHUR V. CHESTER

(1) Heavy physical work that requires alertness, such as operating a crane.

(2) Heavy physical work that does not require much thought, such as pushing a wheel-barrow full of sand.

(3) Hand work, precision.

(4) Machine work, precision.

(5) Clerical work, simple but plenty of it.

(6) Clerical work, complicated.

(7) Talking to strangers—average everyday people—trying to convince them of something.

(8) Talking to strangers—executives, business and professional men—to convince them of something.

The job descriptions beneath the columns would vary perhaps, according to the nature of the work done by the company seeking employees.

Each applicant should be given an extra blank for practice before filling out the one which is to be submitted. The blanks could be run off on a mimeo, at slight expense, or printed at low cost.

The man who is to do the hiring may appraise the applicant by a mere glance at the completed chart. Screening would become simple and easy. A job applicant who has been informed that the company is interested in his chart will not resent furnishing the detailed information required by many employers in these times.

APPLICATION FOR EMPLOYMENT
The Smith Company

TO THE APPLICANT:

Thank you for offering your services to us. In order to save you time and trouble, please show, on the chart below, just what kind of work you like best, and what kind you like least.

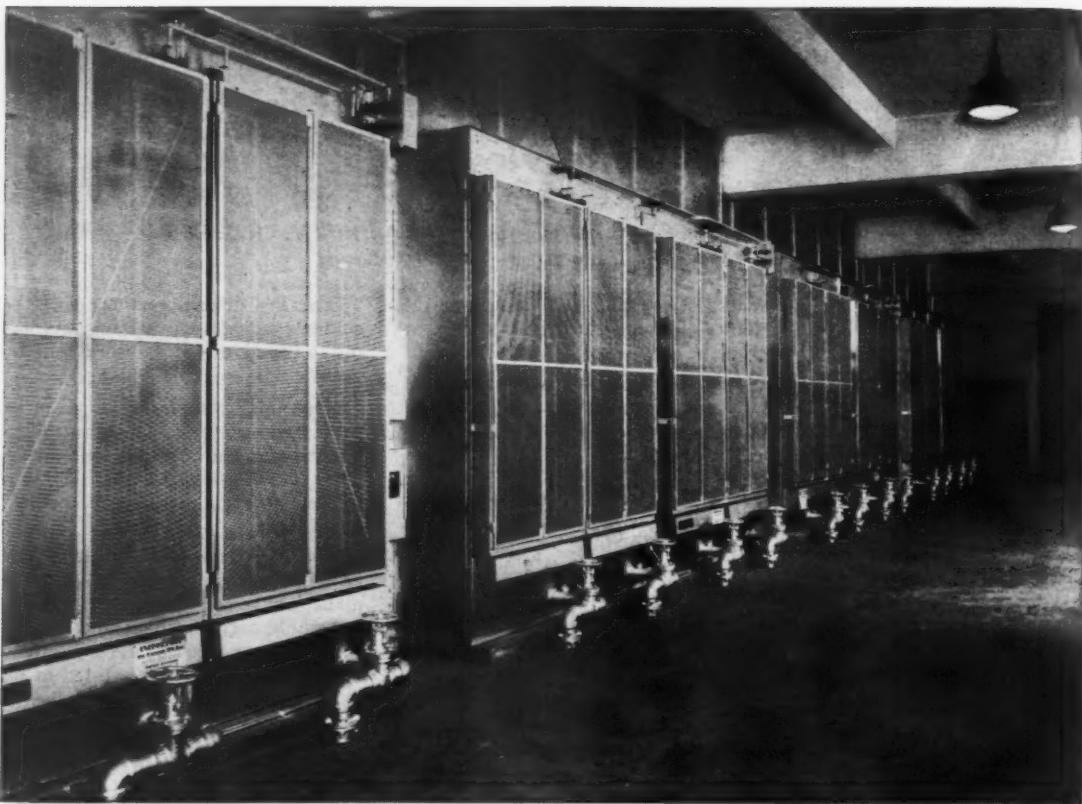
First, pick out the column beneath which is described the work you like best. Draw a horizontal line across that column, opposite the figure 100. If you like the work described in two or more columns equally well, draw lines across them, also, opposite 100.

Next, pick out the work you like least and draw line in that column opposite the 0. If you dislike work described in two or more columns to the same extent, draw lines across them at 0.

Now, fill in the remaining columns in the same way, drawing a line across each to show us just how much you like or dislike each kind of work. Generally speaking, the jobs you do not like would fall below the 50 line, while those you like would be somewhere above the 50 line.

Job Description	Line at 100	Line at 0
Heavy physical work requiring alertness (i.e., operating crane)	At 100	At 0
Heavy physical work not requiring much thought (i.e., pushing wheel-barrow)	At 100	At 0
Hand work, precision	At 100	At 0
Machine work, precision	At 100	At 0
Clerical work, simple but plenty of it	At 25	At 0
Clerical work, complicated everyday people - to convince them of something	At 40	At 0
Talking to strangers - executives, professional people - to convince them of something	At 60	At 0
Talking to strangers - executives, professional people - to convince them of something	At 60	At 0

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AAF ELECTRO-MATIC Precipitators totaling 175,000 CFM

Electro-MATIC super-clean air

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STEEL MILL MOTORS perform more efficiently with less maintenance, if the cooling air is *super-clean*. Electro-Matic*, the *only* automatic, self-cleaning, electronic precipitator is widely used by steel mills to provide dust-free air for their motor rooms.

Highest cleaning efficiency is maintained by the Electro-Matic over a wide range of particle sizes, from smoke to the largest air-borne material. Due to the special design and spacing of its collector plates the filter

curtain is non-clogging and insures uniform air volume. Also, the Electro-Matic's exclusive features of automatic operation and self-cleaning, reduce servicing to routine maintenance and insure maximum operating efficiency at all times.

The filters are standardized, self-contained sections, easily installed in various arrangements to meet any air volume requirements. Like so many in the steel industry, the Electro-Matic installation above is equipped

with oil clarifiers, which continuously clean the Viscosine and simplify sludge removal.

With thirty years experience in solving dust problems, AAF makes the *only* complete line of air filters and electronic precipitators. If *super-clean* air for motor rooms or other operations is one of your problems, call your nearby AAF representative or write today for Engineering Bulletin No. 250-E.

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Trouble spots in wage rates narrowed

by JOB EVALUATION

Here's how a happy agreement between management and labor can be promoted by systematic classification of duties, skills and responsibilities

BASICALLY, we can divide job valuation into three types of plans. First, job ranking; second, point evaluation; third, factor comparison.

For very small plants, job ranking is probably satisfactory, but it is certainly not accurate and the relationships are very broad.

All we do is take the job description and say, "well, this job is more difficult than that one, and that one is more difficult than the next one," and we get a relationship between jobs.

We don't know just what the difference is between jobs A and B, whether it is the same as it is between job B and C. We merely know that there is

WHAT IT IS... WHAT IT DOES

(Excerpts from job evaluation appendix to a management-labor contract)

INDUSTRIAL LABOR, skilled and unskilled, male or female, is subject to division into classes according to the relative amount of skill, experience, and other special qualifications required. These classes are described in terms of a percentage or points above or below unskilled male labor.

Identical work should always be in the same class, irrespective of general wage levels, plants or districts. . . . The scale of rates in terms of money varies with locality, costs of living, etc., but the classification does not. The primary interest is the job itself.

The job is made up of duties, skills, and responsibilities necessary to perform a given piece of work. The analysis is concerned with the work performed and not with the person to whom the job is assigned. The purpose of this job evaluation is to make an analytical study of the contents of each job in the shop and appraise all characteristics of the job according to their relative importance and difficulty.

Through job evaluation we make certain that all of the characters or factors of the job are given their proper place and consideration. It furnishes a means of appraising these factors quantitatively and of determining the relative value of a job in relation to other jobs in the shop.

Job evaluation makes possible the establishment of wage schedules that will be in line for all jobs in the shop. It provides a basis for adjustments in rates of pay when changes are made in the content or nature of a job, and for correcting existing rates which may be out of line with the value of the job. Job

evaluation will make possible better adaptation of the worker to the requirements of the job by classifying the duties and responsibilities of each job.

* * *

BRIEFLY summarizing the benefits of job evaluation:

1. It provides a means for arriving at the relationship between jobs departmentally and inter-departmentally, which can be defended by both management and labor.
2. It avoids differences in wage levels between departments for comparable work.
3. It establishes definite elements upon which wage rates can be based, thus avoiding the over or under payment of jobs with relation to one another.
4. It provides a basis for the adjustment of wage scales which are definitely out of line.
5. In the case of new jobs, it permits an accurate comparison between similar jobs. If no similar jobs are available, it furnishes an accurate means of evaluating the jobs, thus aiding the determination of fair differentials.
6. It will improve selection, transfer and promotion by indicating:
 - a. similar requirements for different jobs,
 - b. the hiring requirement of different jobs,
 - c. the line of promotion or progress to be followed in upgrading and grading employees.
7. It indicates the hazards where physical fitness must be considered and safety instructions given at the time of hiring.



By

**BENJAMIN
BORCHARDT**

Management
Consultant,
Los Angeles

a descending or an ascending order.

If we have related jobs in a small plant, it isn't too bad. For example, suppose we have a machine shop. We have a trucker, a lathe operator, a set up man, and we have a foreman. And there's job ranking.

I don't think anyone will question that ranking, in ascending order. However, is the relationship between the set up man and the foreman the same as the relationship between the trucker and the operator, or between the lathe operator and the set up man? This method does not tell us.

If we go a little farther, we may run into more complications. We have discussed related jobs above; now let us introduce a job that is not related, for example, the production control clerk in the shop. Where does he fit into the picture? Is he above the lathe operator or below? Is he above the set up man? We don't know. So we begin to find definite weaknesses in job ranking, but in a very small plant, we do not have the facilities or the need for a more accurate plan, and it will probably be satisfactory.

A Plan as Accurate as Any

Before taking up point evaluation, let us discuss "factor comparison," an excellent method of evaluation which is as accurate as any plan. It has a distinct advantage over point evaluation in that we do not work between finite limits as in point evaluation, but we

have, you might say, infinite limits for the various factors.

If we have jobs where we must consider extremes of skill, extremes of hazards, or extremes of any other factor, then factor comparison has much more to offer than point evaluation. It has not been as generally used as point evaluation, does not have the universal acceptance and will generally require more selling to both management and labor.

Pick . . . and Sell . . . a Plan

Point evaluation is the most generally used method and probably the best understood by both management and the workers. It is a broad subject and there are hundreds of point evaluation plans. Many firms develop their own, because they feel that none of the textbook plans, as such, are applicable to their plant.

All point plans, however, have in

common the fact that the job is divided into various factors, perhaps only three, perhaps 20. Obviously the correct number is probably some place half-way between these two figures, and for each factor we have various degrees.

Obviously, most plans will come out to the same answer. If they didn't, one of the plans would be wrong, because if we evaluate by two different plans and find different relationships between jobs, either we are condemning job evaluation or one of the two plans is wrong.

You should choose a plan that fits your particular type of operation. The one most generally used is that developed by the National Metal Trades Association for factory operations, who also have a plan for office and technical jobs.

When you have selected your plan, you are not quite ready for the evalua-

tion procedure, because there is a selling job to be done first, in order to avoid much trouble. You should sell the supervisors and the workers.

When I say "sell," I don't mean go out and pat these people on the back and tell them what a wonderful thing is going to happen, namely, a job evaluation plan. I mean educate, and there is only one way to educate people—through teaching them. Therefore, the next thing to do is to set up classes in job evaluation in the plant for supervisors and workers.

Committee Should Include Labor

After this phase of the program has been completed you should establish the committee. I am a great believer in committee evaluation, rather than having the evaluation performed by an individual. It should not be too large or it will become unwieldy. Possibly five or six members.

This committee may be, unilaterally, a management committee, or it may be a joint management-labor committee, depending upon who is sponsoring the plan in the plant.

The technician should be the coordinator of the committee, because there must be someone who is thoroughly versed in job evaluation. Job evaluation is not scientific, because it is based upon judgment; judgment based upon experience, but judgment nevertheless. That is one of the major reasons why I favor an evaluation committee rather than having the work performed by an individual. After all, group judgment is more reliable and acceptable than the judgment of an individual, no matter how capable he may be.

There were labor representatives on the committee which approved the job evaluation appendix written by me that is quoted in the accompanying text, and the work lasted over a period of five or six months. It was done eight or nine years ago, and about a year or so ago four or five evaluated jobs went to arbitration. The company won every one of the arbitrations because the plan had been written in detail in the contract and the plan was followed in the case of the newly evaluated job.

Don't Get Nailed to the Cross

After each description has been written, it should be approved by someone who has the proper authority before the evaluation procedure starts. If you are the one who is going to write the description and you don't have the description approved, somebody may nail you to the cross because the person writing the description usually

Continued on page 60

FINAL COMPARISON SHEET . . .

When everybody agrees that the correct degree for each factor of every job has been determined, evaluation procedure has passed its biggest hurdle (explanation in text).

DEPT.	JOB TITLE	CODE	EDUCATION	EXPERIENCE	INITIATIVE & INGENUITY	PHYSICAL DEMAND	MENTAL OR VISUAL DEMAND	RESPONSIBILITY FOR EQUIPMENT OR PROCESS	RESPONSIBILITY FOR MATERIAL OR PRODUCT	RESPONSIBILITY FOR SAFETY OF OTHERS	RESPONSIBILITY FOR WORK OF OTHERS	WORKING CONDITIONS	UNAVOIDABLE HAZARDS	TOTAL POINTS	LABOR GRADE
Pressing	Press Operator	1	1	2	2	3	2	1	2	2	1	2	3	184	5
"	Pluto Setter	1	2	2	2	3	2	1	2	1	1	2	3	196	6
"	Audio Tester (Line)	1	1	2	1	3	2	1	1	1	1	2	1	139	2
"	Scheduler	2	1	3	1	2	2	1	1	1	1	2	1	162	3
"	Utility Man	1	1	1	3	2	2	1	2	1	2	1	3	160	3
"	Leader	2	2	2	1	2	2	1	2	5	2	2	2	200	6
"	Master Tester	1	2	3	1	3	2	1	1	1	3	2	1	185	5
Finishing	Multiple Edger	1	1	2	3	2	2	2	2	1	2	2	2	169	4
"	Inspector-Packer	1	1	2	1	3	2	1	1	1	1	2	1	139	2
Warehouse	Warehouseman	1	2	1	3	2	2	1	2	1	2	1	2	172	4
"	Truck Driver	1	2	2	3	2	3	2	3	1	2	3	2	206	7
"	Ship. & Rec. Clerk	2	2	3	2	2	3	2	2	5	2	2	2	234	9
Mainten.	Janitor	1	1	1	2	2	2	1	2	1	3	2	2	150	2
"	Steam Engineer	3	3	3	2	2	3	1	3	1	3	3	3	265	12
"	Mechanic	2	2	3	3	2	3	2	2	3	3	3	3	249	10
"	Helper	1	1	1	3	2	2	1	2	1	3	3	3	165	3
Matrix	Leader	2	2	3	2	2	2	1	2	5	3	3	3	239	9
"	Worker	2	2	2	2	2	2	2	2	1	4	3	2	220	8
"	Helper	1	1	1	2	2	2	1	2	1	4	3	3	165	3
"	Solution Analyst	3	1	2	2	2	2	2	2	1	3	3	3	202	6
"	Quality Control Inspect.	2	2	3	1	3	2	1	1	1	1	1	1	179	4



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E. B. Johnson, *Freight Traffic Manager*
Santa Fe Lines, San Francisco, California

Santa Fe—all the way



JOB EVALUATION

... begins on page 57

does not have the authority to say that this is the way that the job is to be done. So be sure that the descriptions are approved.

After that, the evaluation procedure should be more or less as follows. (Remember, we are working on a committee basis):

(1) The technician or the coordinator of the committee should send the job descriptions to be evaluated at the next meeting to the members of the committee, together with questionnaires. Thus, for each job, for each factor, it will be very easy to answer just what degree of education or responsibility or other factor the evaluator feels it should be. The questionnaires should be returned to the chairman of the committee before the next evaluation meeting, so that information can be recorded and coordinated.

(2) The committee meeting is scheduled. Let us assume that we are going to evaluate five jobs, which is usually a good half-day's work if you want to do it thoroughly, factor by factor. Those factors can be grouped into the skill factors, under the responsibility group and under the working conditions group. In the skill group we will have education, experience and complexity, and so on.

Let us assume that we are analyzing experience, and that of the five people on the committee, three will say it is the third degree, one will think it is the fourth and one of them the second. You might say that three is a good average, but this will not be very successful, because someone still thinks it should be the fourth degree and somebody else still thinks it should be the third, even though three is a good average.

We must get unanimity in that group, which is not easy, because the man who thinks it is "four," in other words, it takes longer to learn that job, is not going to come down very easily, especially (if this is a management-labor committee) if he happens to be one of the labor representatives.

Let Them See It

So, if we cannot get unanimity of thought, we just leave it open for the moment. Later some of the job factors on which we have had unanimous agreement may also seem out of line. As we get more jobs to compare with, we find more original decisions up for reconsideration.

For that purpose we will have what we might call a comparison sheet. Have a big card (about 3 x 5 ft.) and

Continued on page 62

page 57
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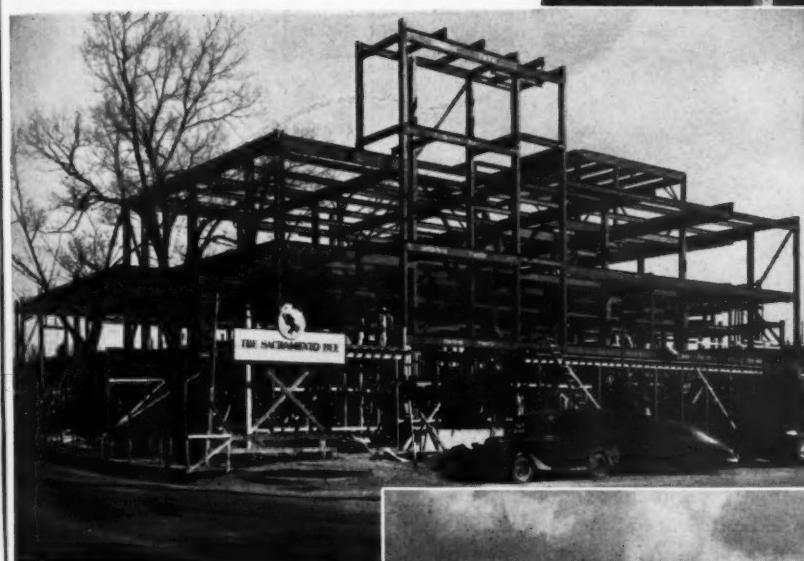
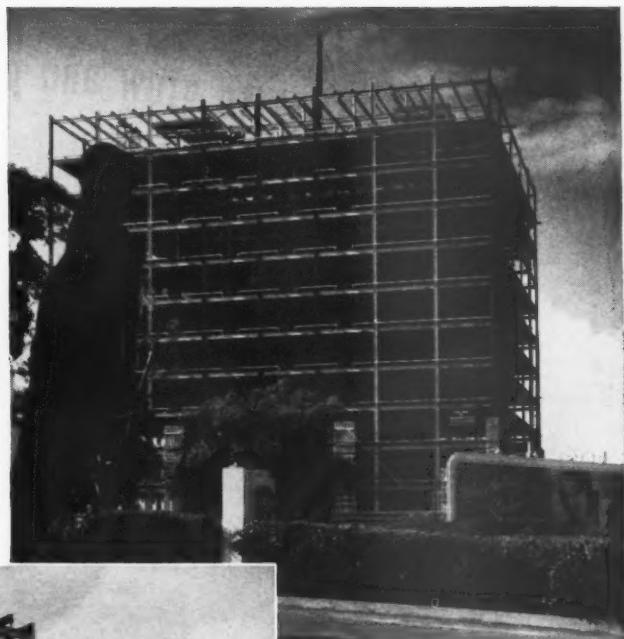
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NEW Steel Construction by BETHLEHEM PACIFIC



AT SACRAMENTO — Framework for the new press building of The Sacramento Bee. This is one of two adjoining structures to be erected for the McClatchy Newspapers. Designed to provide space for the press room, composing room, stereotype foundry and editorial offices, this building contains approximately 350 tons of structural steel.

Bethlehem Pacific is handling the steel fabrication and erection of both buildings. The general contractor is Lawrence Construction Co. Architects and engineers are Lockwood-Greene, Inc.

AT SAN DIEGO — The new Midway Drive Bridge across the San Diego River flood control channel. This 11-span, 1291-ft structure required 1700 tons of steel. Except for the vertical stiffeners, the girders are made of Mayari R low-alloy, high-strength steel. Bethlehem Pacific is handling the fabrication and erection. Guy F. Atkinson Co. is the contractor on the substructure; the Vinson Construction Co. of Phoenix is the contractor for the roadway decking. Consulting Engineers are Sverdrup and Parcel, Inc.

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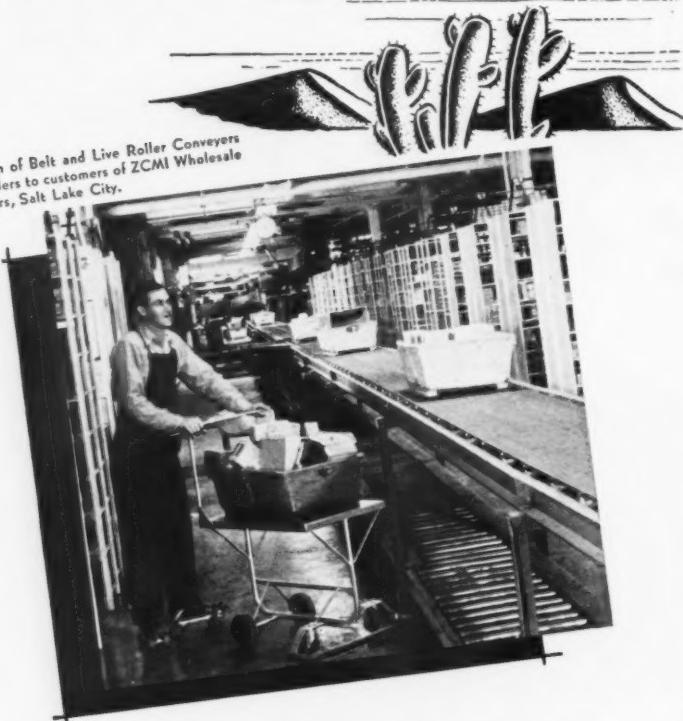
BETHLEHEM PACIFIC

October, 1951 — WESTERN INDUSTRY



"helping the west to grow and produce"

A system of Belt and Live Roller Conveyors speeds orders to customers of ZCMI Wholesale Distributors, Salt Lake City.



With a modern plant in California, and engineering offices strategically located throughout the Pacific and Mountain States, Mathews Conveyor Company West Coast is helping the West to grow and produce. Through these facilities, the company is making available to both light and heavy Western Industry a conveyer service that is complete from proposal engineering to final installation.

Mathews West Coast is one of three modern Mathews plants, and into the equipment the company designs and builds goes the experience of nearly 50 years of working with materials handling problems. That's why we can say, "If it's Mathews equipment, it has to be right."



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LOS ANGELES

PORTLAND

SEATTLE

DENVER

HONOLULU, T. H.

SALT LAKE CITY

JOB EVALUATION

... begins on page 51

always have it standing in front of the group where everyone can see it. Look at one factor at a time, so cover up everything else.

Make the vertical comparison, let us say, for experience. You find Job "A," which we originally agreed should have third degree for experience, and another job that we have rated fourth degree for experience. Then someone says, "That doesn't look right, that job doesn't take any longer to learn than the first one," and about that time everybody agrees, so we have resolved something.

The important analysis is the vertical comparison rather than the horizontal comparison in evaluating a single job. In other words, you must get the relationship separately for each factor. Finally, we have our comparison sheet agreed upon; we have the degree for each factor for every job.

Next is the clerical detail of assigning points as prescribed by the plan to the various degrees for each factor of each job and totalling the points per job. Then we come to drawing the scatter graph, on which, together with the total points per job, plotted against the current wages, you should also plot some community rates, where you are sure of the job and the acceptance of the title.

Remember that as soon as we make a community survey we are inclined to be looking at titles rather than detailed description, and we are not always sure that they are the same thing so, we must be reluctant to go too far on the community surveys, although there are some fairly clean cut jobs that you can and should add to your graph to see how they relate to your evaluations.

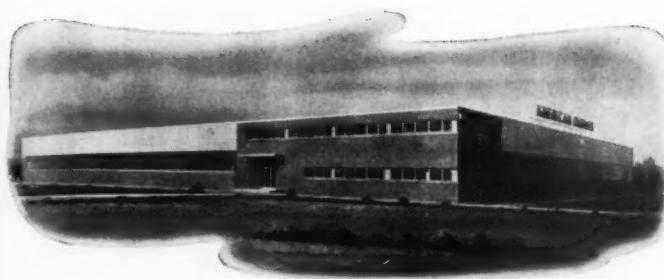
Having plotted the points, the next thing is to draw the line of best fit. After that we will establish our labor grades; the number is pretty much a matter of your own company policy, usually about 12. In other words, group the points, let us say from 100 to 120 points is labor grade one; from 121 to 140 is labor grade two, etc. Then assign these labor grades to the various jobs in the plant, depending upon how many evaluation points we determined through job evaluation.

Be Absolutely Inflexible

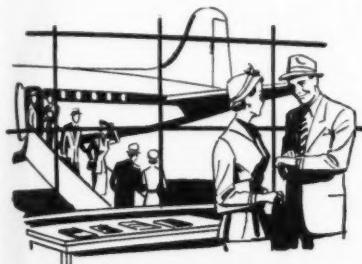
Now, at this point you are going to have several problems, but one of them is likely to be outstanding, where a job misses by one little point from falling into the next labor grade which would mean possibly, ten cents an hour.

Concluded on page 65

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This picture of our west coast plant in San Leandro, Calif., is to remind you that with this nearby location we can save you time, money and provide you with faster service on American Blower products. For data call or write our nearest branch office.



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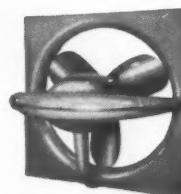
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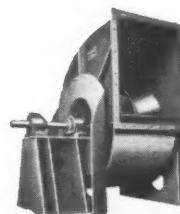
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Quality

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Here is a real proving ground for any rubber product, as nearly every destructive condition is present: sea water, petroleum, abrasion, high pressure, rough handling, and others. Yet this Pioneer product is again adding to the Pioneer reputation for *long service*.

Why not put the unusual capabilities of this organization to work for you? Your nearest Pioneer representative will be glad to tell you the full story on Pioneer hose, belting, packing, fire hose, and other products.

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JOB EVALUATION

... begins on page 57

more. If you say, "let's throw it into the next grade," you are in trouble, because you have established a new breaking point, and then you have the problem of the fellow one point below that. The only answer is to be absolutely inflexible.

Another problem is about the currently underpaid and overpaid workers. For those that are underpaid, it is easy; you just raise the rate and everybody is happy.

The Overpaid Job

But for the overpaid job, we try to find another spot requiring greater skill and a higher classification, but this is not easy to do, so we leave him at his present rate and absorb the difference, expecting that when the next general increase comes he will be left out. Unfortunately, especially in the present labor market, we don't do it, which is fundamentally wrong. Whatever we do becomes a matter of company policy and probably also negotiation rather than job evaluation.

Even after this decision has been made, the job of evaluation is still not complete, because job evaluation is a dynamic, a changing thing. It is not static. Jobs change continuously, and whenever jobs change or a job changes, a new description must be written for that job and you must re-evaluate that new description, promptly, or the entire plan of job evaluation is going to fail.

Don't Let It Sour

I have seen many good job evaluation plans go completely sour, merely because they have not been maintained. Jobs have not been re-evaluated when they have changed. Usually, in production assembly operations, jobs are continuously broken down and made simpler, so if we do not rewrite the description and re-evaluate, we are not getting any place at all.

Job evaluation, as we can see, does have limitations, but it is only a tool of wage administration, and if we use our tools well, even with imperfect tools, we can build a fine structure.

We must train the supervisors and the workers in the use of these tools, and, equally important, we must also train management. Otherwise we will have neither management support nor proper use of the plan.

Matter of Philosophy

Let us also remember that job evaluation is a matter of philosophy as well as a matter of numbers. We state that we are measuring a job, and not the

worker, which is absolutely true. But the worker does not differentiate between himself and his job. To him it is one and the same thing. Let us therefore be superficial in this very important matter.

We must be human engineers as well as industrial engineers, and, if we approach our problem with that knowledge as well as our technical knowledge, and use both throughout, we will conclude our program with a job evaluation plan that will be a welcome part of an over-all plan of wage administration, acceptable and accepted by both management and the workers.

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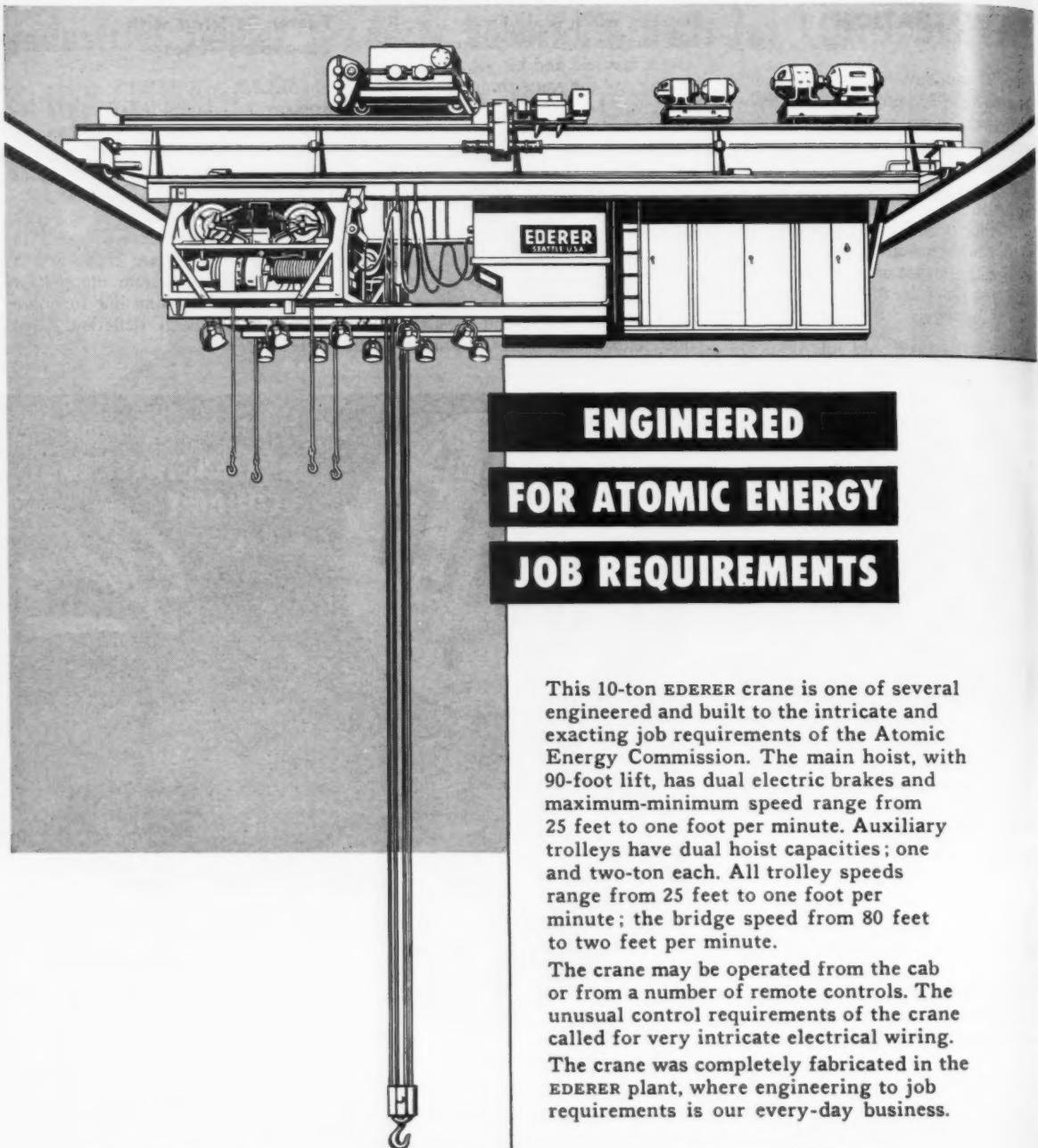
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The crane may be operated from the cab or from a number of remote controls. The unusual control requirements of the crane called for very intricate electrical wiring. The crane was completely fabricated in the EDERER plant, where engineering to job requirements is our every-day business.

If you have special materials handling job requirements, an EDERER engineer will be glad to discuss them with you. We engineer and build all-electric overhead cranes, grapple cranes, monorail hoists, hand-operated cranes—with lifts, spans, capacities and special features for any type of job in any industry.

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How well would MY PLANT BURN?



JUST ASK YOURSELF. Would it confine itself to a small area with minimum damage, or would it rage unchecked for lack of control devices?

FIGURING OUT where fires might break out and then preventing them from doing so can be a fascinating and practical game for factory owners, managers and maintenance men to play.

An equally sportive game of wits is to anticipate how a fire might spread throughout the plant, if it should start, and to take precautionary measures to confine it to the smallest possible area. It's like being on the defensive against the world's most destructive foe and blocking him before he does any real damage.

A Crazy Opponent

Do not underestimate your opponent. Fires work their way through buildings in the craziest fashion. A fire the writer happened to witness and afterwards investigate at the Globe Electric Company, Seattle, early this year is a good one to study, because it was plain to see how it traveled, and what could have prevented it from spreading once it started.

The fire was started by a careless maintenance man who tossed his cigarette butt into the corner of the men's wash room. Ironically, he stood beneath a "No Smoking" sign while smoking.

He and his helper then left the building. It being a Saturday, there was no one else on the premises. It was ten o'clock in the morning and the fire had a three-hour headstart before it was discovered. By then it was mushrooming throughout the lower floors and sweeping on up to the upper ones.

Ironically, too, the papers for an automatic sprinkler system had been signed the night before and the installation was to have begun on the following week. Moreover, there was no automatic alarm system so no one was aware of the fire, including the firemen who sat in the Seattle Fire Department Headquarters only three blocks away, until a passerby happened to see the smoke.

The fire followed corner partitions of the wash room along the rear wall

of the building, to and through the balcony floor. Had there been sufficient fire resistive material used in the ceiling of the first floor the fire probably would have been confined to that floor.

Next the fire spread out along the walls and ceiling of the balcony, working its way toward the front. There were wooden, enclosed stairwells on each side of the balcony going to the third level; both were equipped with fire doors (though not approved types). The one on the right was closed, the one on the left open. Both stairwells were scorched on the outside, but the fire did not break through them.

Close the Door on Damage

Because the door on the right was closed, the rushing flames were diverted back down over the end of the balcony to the first floor. The open door on the left, however, permitted the flames to sweep unopposed up the stairwell to the story above. Had that second fire door been shut, the fire



This "2 strips — not 6" idea is saving important sealing labor in shipping rooms from coast to coast.

Because Snake Tape is reinforced, two strips alone give strap-like strength to cartons. Users report: "Damage claims due to tape failure are unknown."



LET SNAKE TAPE BE YOUR ANSWER TO NPA ORDER M-59
This order, effective May 1, 1951, limits the use of steel strapping. We suggest that you carefully review this order and investigate the merits of Snake Tape as the answer to new closure problems.

Isn't it time to try Snake Tape on your cartons? We will gladly mail more facts and a 20-yard test sample at our expense. Send your request now to Angier Pacific Corp., 55 New Montgomery Street, San Francisco 5, California.

Sturdy cords are imbedded in waterproofing material between two layers of selected kraft. Best animal glue assures a perfect seal. 6 WIDTHS in 100-yd. rolls. Easily dispensed by almost any "cut-off" type machine.

(Left) SNAKE TAPE also gives unexcelled protection to products that "get it in the end." (Photo, courtesy Sloane-Blabon Corp., maker of quality linoleum products.)



Industrial Protective Papers Since 1895
Distributors in Principal Cities

would undoubtedly have been confined to the first floor and balcony, the fire would have been discovered sooner and the fire loss cut in half. It has been estimated that the closed fire door saved an additional \$10,000 damage.

The fire disclosed the weaknesses in the construction and maintenance of the building. Shiplap was used in stairwells and as a header over the fire doors, instead of mill construction 3 in. tongue and groove, practically nullifying their effectiveness as the fire in the lower stories broke through the shiplap stairwells even though it did not get through the fire doors. Where the fire doors were closed on the upper floors they definitely held back the fire. All fire doors were closed on all floors to the freight elevator and the grease on the elevator's working parts and machinery had not even melted!

Had ALL fire doors been closed, and fire resistant material been used where partitions joined the ceilings, the fire loss here would have been slashed in half. Had the automatic sprinkler system been installed, or an automatic fire alarm system set up, the fire loss would have been cut to practically nothing.

Admittedly the Globe Electric Company was housed in an old building, but there are still thousands of such buildings in this country serving as factories, warehouses and such.

Fireproofing Isn't Enough

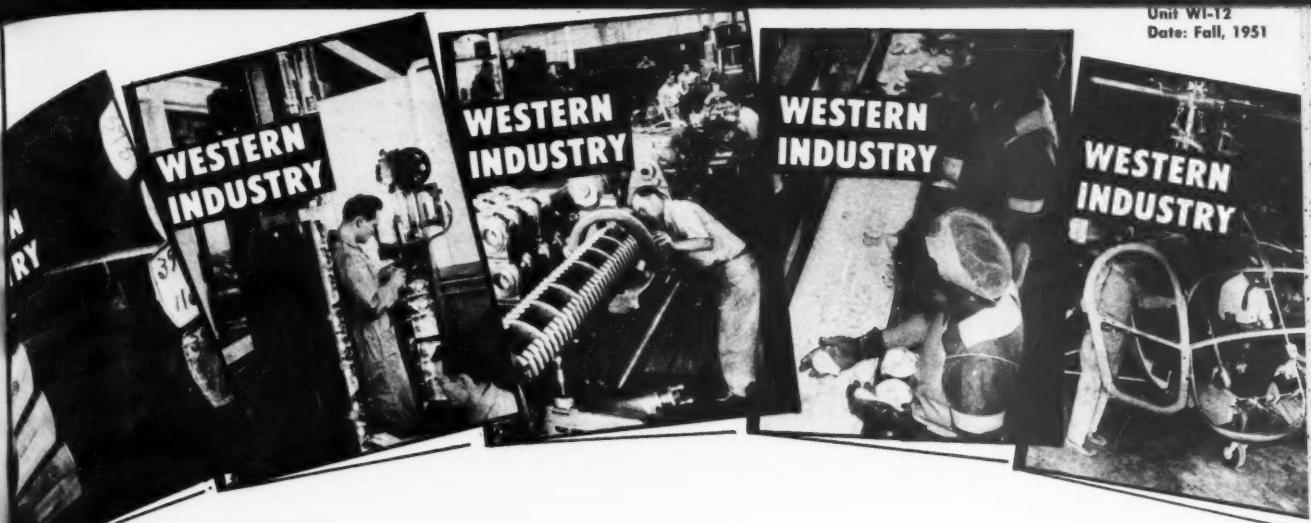
New type structures are so erected as to insure that every help is given to confining an attack of fire to as small an area as possible, and that no more combustible material exists to feed the flames than is of necessity present in the contents of the building.

Fire doors, and other safeguards against fire are designed into the building, to keep fire from spreading, and to save life as well as property. Their purpose is to delay the spread of fire, and confine it to a small area thereby giving the inmates more time to effect their escape, and allowing the fire pumper a better chance of arriving in time to fight the fire in its incipient stages and thus with more immediate success.

Too often no such safeguards exist, or where they do exist are quite inadequate. Unfortunately they lull business owners into a state of misplaced confidence by thinking that because they have a so-called fireproof building their business is safe from fire.

Each year fire losses reveal the fallacy of such thinking. The Globe Electric Company's building was old, but well constructed as to thickness of

Continued on page 71



Here's Your Chance To Score . . .



Put WESTERN INDUSTRY's January, 1952 ANNUAL REVIEW & FORECAST ISSUE on Your National Schedule. Out January 10 . . . forms close December 10.

WHY THE JANUARY REVIEW & FORECAST ISSUE? Because its extensive, accurate editorial coverage of industry in the West will make it the hand-book of so many Western manufacturers—just as previous issues have been.

Because it will do just what the title indicates: REVIEW and FORECAST. Here will be a composite picture of Western industrial activity, with emphasis in the fields of primary importance, such as . . .

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Aircraft and parts

Machinery—agricultural, food processing, electrical, and many others

Petroleum, gas, electric power; other fuels, energy

Electronics

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Building, commercial and private

Ceramics

Furniture

Apparel and textiles

SMOG RESOURCE or NUISANCE ?

By
GORDON
LARSON

A COMPROMISE MATERIAL
between WOOD and PLASTIC

Wood waste and resin has
come from the laboratory to
the production line to serve
many purposes and tap a
big source of supply.

BY ALBERT E.
MILLER

IS YOUR PLANT DIFFERENT?

If you think work measurement techniques
and an incentive plan can't apply to your
manufacturing processes, you may be
missing an opportunity to increase labor
productivity.

B. ALFRED E.
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WHO WHAT WHERE ?

Everyone knows, all the time, with
this work order form developed at
Pacific Airmotive to keep track of
progress on overhaul jobs.

Nabisco's new Portland plant
combines . . .

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Automatic conveyor system and
easily-controlled gas ovens are
the keys to this

PREVENTION
is your best insurance
against FIRES

BY LOREN S.
BROWN

"FINGERJOINTING"—

A way to grow lumber in the supplier's yard

? **WHY THIS REGIONAL BOOK?** Because truly "The West Is Different." Climate, terrain, natural resources, variety of agriculture, high purchasing power, unparalleled population growth—all add up to great industrial growth. Expansion by industry begets the need for improved and/or new production techniques, new machines—a multitude of wants to be satisfied.

WESTERN INDUSTRY'S Score ...

Editorially—It covers Western industry horizontally. It provides editorial of the "How" and "Why" variety, needed by a young, growing industry. This produces readership, of course! (See titles above, which are from one issue.)

Circulation-wise — WESTERN INDUSTRY covers all the Pacific and Mountain States AND IT IS EFFECTIVELY REACHING THE MEN WHO ARE THE DECIDING FACTORS in buying and specifying in management as well as production groups.

WESTERN INDUSTRY works at having a *live* circulation list.

Advertising-wise—It is your best buy. Only a magazine devoted to the West can cover the West in terms of its particular needs, especially so since so many industries and products are "native" and not typically national.

You will reach more than 9,000 Western industrialists in the January Review and Forecast Issue. Start your New Year sales campaign right—reserve space NOW.

WESTERN INDUSTRY

In the West, during the past decade

- Population has increased 5½ million.
- Labor force has increased 80 percent.
- Number of industrial plants has increased 45 percent.

Sources:
1950 Census of Population;
'47 Census of Manufacturers.

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HOW WELL WOULD MY PLANT BURN?

... begins on page 67

walls, floors, beams. When fire broke out it lacked but a few features of construction that would have confined the fire to the first floor.

What about your building? If fire broke out in it, how would it spread? What can you do to keep it from spreading? Getting the correct answers to those questions now may save your business some day.

Getting the answers calls for a little imagination. How it would spread depends a great deal upon a number of factors, such as construction of the buildings, safeguards and so forth, and where the fire broke out. What to do would, in turn, depend upon those factors.

Arm Yourself

Why not take a slow walk around your building or buildings with appropriate persons and consider those factors? You might take an outside contractor, or one of your own men who "knows construction," on your first tour of inspection to consider the factory as a whole.

Start right with the walls, ceilings and floors and check how they were built and with what were they covered. Such an over-all tour may disclose that you should put up a fire-break here, or fire door there.

Have you sufficient space between stories and subdivisions or balconies? Do you, like the Globe Electric Company, need an automatic alarm and sprinkler system? Should you, too, put fire resistive material where partitions meet ceilings? Are your stairwells your weak spot, too?

Armed with such information, you will begin to see how fire might well travel through your building, and take appropriate steps to stop it, if possible, or, at least, confine it to one section.

Imagine Fire

Subsequent tours could be concentrated in certain areas of operations such as office space, machine shop, finishing, welding, and so forth. These tours could be made with office manager, plant superintendent, foreman of the shop, and head painter, welder and the like, including perhaps, the maintenance man who would be responsible for making changes throughout the plant.

On these tours you would keep the common causes of fire in back of your mind, also the specific causes that relate to your particular type of busi-

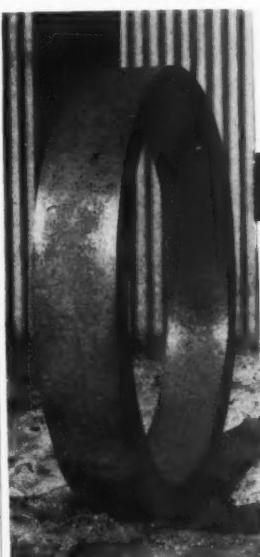
ness. Your purpose is to discover how fire would spread to other parts of your establishment from these areas, so you consider where fire might start within those areas. That, in turn, makes you think in terms of causes of fire and how to prevent them, which ties up that prime consideration with confining fires.

How would your building burn if a fire started in the office space? How such fires start on desks, or in wastebaskets and a few in closets, from that most prevalent of causes, cigarettes. Would it eat up the partitions?

Would it sweep down and into the production area because of open passageways? It all depends upon your layout. Could your layout be improved to confine fire to one part of your office space, or, at worst, just to the office space?

No Fire Is Typical

That type of imaginative-thinking could likewise be applied to the machine shop, finishing, welding and other areas. Each time you start with WHERE and then figure out HOW the fire would spread.



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It is well to remember when walking through the metalworking section of your plant that non-combustibility is not a guarantee against fire damage. Fires could start any place in your shop and from a number of causes, from fires in trash cans from oily rags to those in the machines themselves from hot bearings.

One \$700,000 fire in a midwestern metal working plant started in a hot roll forging machine when a high pressure hydraulic feed line ruptured and sprayed oil over red hot metal parts and nearby furnaces. Hydraulic and

cutting oil supply reservoirs on nearby machines provided additional fuel for the fire. Shortly after the fire began a natural gas main broke (due to the heat causing collapse of a section of the unprotected steel roof) adding to the intensity of the fire.

This example is not typical, perhaps, of how fires spread, but then no fire is. That is why it takes a lot of ifs, ands and buts to keep a fire cornered. However, this example shows how the fire might have been confined by having relatively safe hydraulic fluids in the machines, and, of course,

automatic sprinkler protection over the machines using combustible fluids.

Special attention should be given to how fires might spread while you are "casing" the finishing and welding areas because of the inherent possibilities of fires in both those areas.

Fire Likes "Weaknesses"

Fire, of course, rises to the first horizontal surface, then travels horizontally until it finds space to travel upward again. It frantically searches for a "weakness" to go through—and that may be but a knothole. A finishing room or adjacent storage cabinet full of flammable liquids might well mushroom into an intensive fire speedily.

A sprinkler system might well confine the fire to the paint booth area, but some so-called paint room fires start just outside the area, as painters clean their spray guns with flammable liquids. How would such a fire spread in your plant, especially if there were no sprinklers in this second area?

Welding areas likewise call for clever thinking to block the relentless opponent, for cutting torch sparks can run along the floors and work their way into cracks faster than the eye can follow them. They have been known to ricochet around corners and land on oily rags in a closet, to sleep until midnight before flaring up.

Not only must the regularly assigned welding areas be inspected, but also all other areas where welding units might be taken to the job. These areas might be fire safe without welders around, but highly dangerous when welding units are used.

You Know Best, Or Do You?

This by no means exhausts the possibilities of where you can study how fire might spread were it to break out in any one of the sections of your plant. You know your mill or factory better than anyone else and can think of many more places to inspect.

At best this article is but a new point of departure for your fire protection thinking. Fire inspectors from insurance companies or from your local fire department will gladly help you all they can to corner fire, but no one but you has a real and personal interest in the answer to the question: "How will my building burn?"

Oregon Wants More

PROBLEM of obtaining additional defense business for Oregon is being studied by the Oregon Committee for Industrial Development. Sid Woodbury heads up this work. Committee will also study long-term industrial development prospects for that region.

Use of LP-Gas by industrial plants is becoming more and more widespread because of the many advantages offered. LP-Gas plants serve both as a stand-by plant and as an independent utility for industrial firms. Many gas companies offer special rates to industrial firms who protect themselves against service interruptions with stand-by equipment. LP-Gas plants provide constant service in case of interruption of regular gas service. LP-Gas fuel may be used with the same burners and controls as natural or manufactured gas and the same temperatures may be created.

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Now this table loves wet glasses! The Problem: Furniture manufacturers wanted a way to keep wet glasses from ruining furniture finishes and leaving white rings.

The solution: Industrial Finish Engineers were called in. Developed a special finish that not only laughs off water stains, but also resists heat, abrasion, alcohol and food stains. As a result, furniture makers have an extra selling point—a better product.



Improve your sales through Engineered Industrial Finishes!

On this page are just a few examples of the way Industrial Finish Engineering can cut down manufacturing costs and improve the selling features of a product.

What can it do for your product?
How much can it improve sales?
How can it cut manufacturing costs?

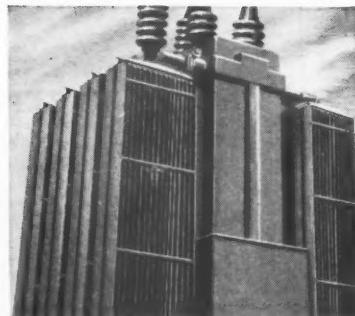
To learn the answers, consult with an Industrial Finish Engineer.

For the Finish Industry has technical ability to make finishes equal to the purpose for which each product is bought. Remember, most of your customers start buying with the finish in mind.

The better the finish - The better the buy!

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October, 1951 — WESTERN INDUSTRY



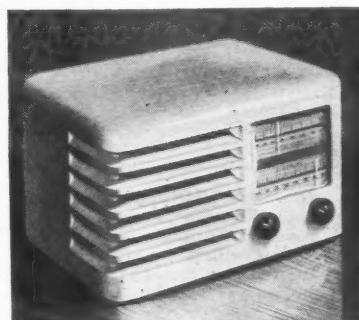
Problem: Makers of electrical transformer boxes wanted a finish that would withstand heat of molten asphalt mixture used to anchor electrical elements in place.

Solution: Industrial Finish Engineers developed a finish that not only withstood this heat, but was also durable, good looking.



Problem: To find a finish that would protect cars from weather, corrosion, and be applied quickly.

Solution: Industrial Finish Engineers were called in. Developed a finish only three-thousandths of an inch thick that resisted the elements — could be applied fast — dried fast — was durable.



Problem: To develop a colored coating to be applied to plastic articles.

Solution: Industrial Finish Engineers developed a special enamel finish. Manufacturers can now make a single run by coloring the plastic with the application of a new enamel in many colors.

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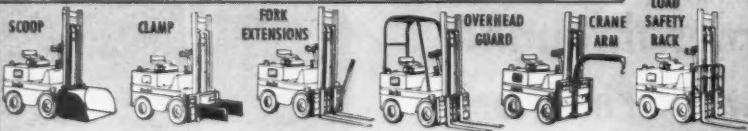
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AND
many others
too numerous
to mention

Today's Demand in Packaging Materials

MORE THAN HALF the timber harvest of this country on V-J Day was going into the manufacture of packaging materials, and in 1944 nearly 7 per cent of all the finished steel produced that year went into packaging, according to Clinton K. Royce, chairman of the technical committee on packaging, Federal Specification Board.

Speaking before the Western Packaging Association in San Francisco on September 12, he also reported that excess production capacity of unbleached kraft paper in the United States is only 7 per cent above the 1950 production of 2,300,000 tons, and that corrugated and solid fibre container board production was within 4 per cent of total capacity.

Full capacity production of waxed papers, cellophane, tinplate, aluminum, aluminum foil, steel, acetate and polyethylene did not meet the demand. All this despite the fact that 1950 military requirements accounted for less than 10 per cent of the nation's total consumption of packaging materials.

More coarse papers are needed to make kraft-veneer laminated panel board required by the military for wood cleated boxes, improved ration boxes, and fibreboard boxes for clothing to save weight, cube and trees, according to Royce.

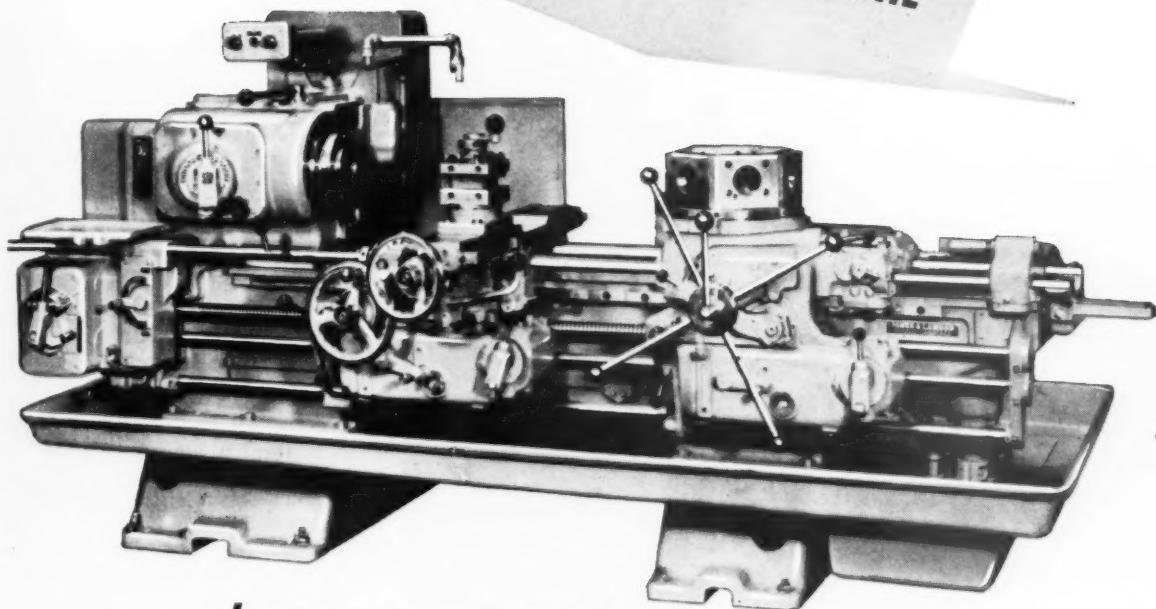
New and wider ranges of temperature place an even heavier burden upon packaging materials, he said, making asphalt-laminated kraft paper obsolete because it will not stand the low temperatures which must be met, while intimate wraps of grease proof papers will no longer hold the synthetic types of greases and preservatives required by field conditions.

Southern Pacific Tests Turbine Locomotive

AN EXPERIMENTAL gas turbine locomotive, 85 ft. long and delivering 4,500 horsepower has been placed in test operation by Southern Pacific, on trial runs in freight service between Roseville and Bakersfield, Calif., and between Roseville and Watsonville Junction.

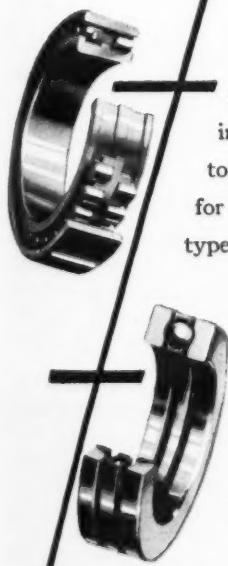
This single unit was built by American Locomotive Co. and General Electric. It looks like a diesel locomotive from the outside, but the turbine exhaust roar identifies its power plant. It burns heavy oil, rotates on one shaft, has no reciprocating parts, and is geared to electric generators that power electric motors on each of the eight driving axles.

*the chips are down
FAST
with this
UNIVERSAL TURRET LATHE*



Jones & Lamson* heavy duty machinery has honestly earned its reputation for easy operation, versatility and repetitive accuracy. This 7A Saddle Type Universal Turret Lathe, for example, is $4\frac{1}{2}$ tons of high powered precision, built and powered to give new production efficiency. Rugged, functional design is a feature of this new 7A Lathe. For greater spindle rigidity, **B&K** Double-Row Cylindrical Roller Bearings and Ball Thrust Bearings are used. Result: repetitive accuracy, uniformity of finished work; low friction torque which permits spindle operation through a wide range of speeds without need for bearing adjustment. **B&K** Bearings are keeping friction at the minimum on every type of heavy machinery. They've proved their dependability in service.

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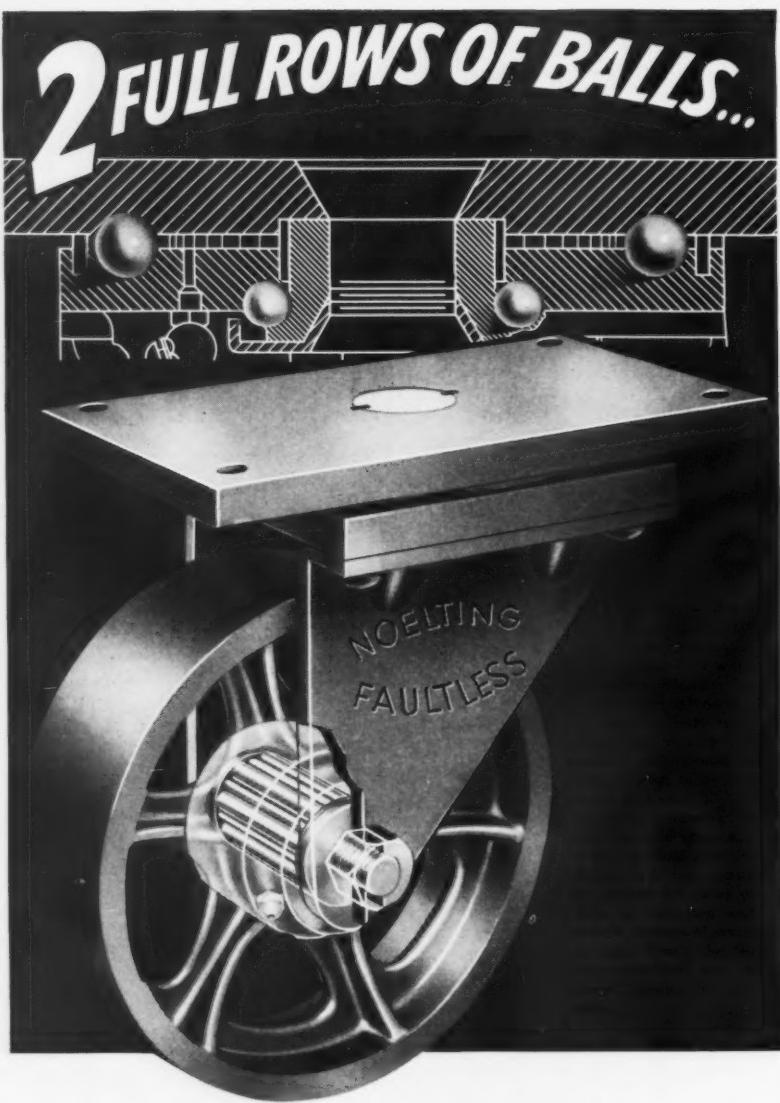
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- engineering service
- field service

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.
—manufacturers of **SKF** and **HESS-BRIGHT** bearings.

SKF
BALL AND ROLLER BEARINGS

* For details on this and other Jones & Lamson machines, write Jones & Lamson Machine Co., Springfield, Vermont.



NOELTING

**CUT MAN-HOURS
and
HANDLING COSTS**

Series H-300 Engineered Casters release manpower for more productive jobs. Faultless equipped production lines cut sharply into direct labor wherever materials are moved.

Faultless
**INDUSTRIAL
CASTERS**

SAVE COSTS 3 WAYS



1. PRODUCTION
Higher production costs demand new short cuts. Faultless Casters speed up the flow of materials.



2. MAN-HOURS Cut handling time, accounting for over 20% of industry's man-hours.

3. FLOORS No need for costly floor alterations or floor covering—Faultless wheels are available for all types of floor surfaces and loads.

FAULTLESS CASTER CORPORATION DEPT. WI-10, EVANSVILLE 7, IND.

Pacific coast office and warehouse: 1252 So. Boyle Ave., Los Angeles 23, California.
Stocks carried for immediate delivery.

California Manufacturers Association Meets

AT THE California Manufacturers Association annual meeting at the Ambassador Hotel, Los Angeles, on October 18, Senator Homer Capehart (Indiana), who is also president of the Wurlitzer Corporation, will be the banquet speaker and President John S. Coleman of the Burroughs Adding Machine Company the noon speaker.

The morning session will have two forums, one on freight traffic, led by C. F. Nielsen of Lockheed and representatives of railroads, motor carriers, airlines and steamships, the other on unemployment insurance led by Bernard Teets, director of the Colorado Bureau of Employment Security.

In the afternoon Dean O. Bowman, assistant administrator for policy coordination, NPA, will lead one forum on defense production, and President W. C. Mullendore of the Southern California Edison Company another on fuel, power and water.

New Buildings for Western Industries

WEST COAST manufacturers can now take advantage of a plan that offers them a building designed to their specifications, without buying the building. This plan has long been in operation in other industries (retail stores, for example) where the building is owned by an investment organization (such as an insurance company) and rented to the tenant.

One of the chief advantages of this plan is that the tenant firm's capital remains liquid and available, rather than being tied up in real estate. George W. Carter Company of Los Angeles offers this proposal to industry, and calls it a "one-control package."

Carter services include submitting selection of several sites; recommending an architect who is a specialist in the particular type of structure needed; supervising the design of the building so that it fills the need of the tenant; functions as contractor as the building goes up; handles the interim financing; finally negotiates the sale to investor for lease-back at a pre-arranged rental figure.

In the past two years the firm has handled almost \$8,000,000 in building contracts, chiefly for national corporations who were building branch plants in the West. On the Carter client list have been United States Gypsum, Burroughs Adding Machine, Standard Brands, Cyclone Fence Division of American Steel and Wire Co., and National Cash Register Co.



Aerocor as insulation on steam-traced line



Aerocor as flexible duct insulation



On irregular surfaces...

SAVE MONEY with FIBERGLAS® AEROCOR® INSULATION

Flexible, resilient Fiberglas Aerocor, the most versatile and efficient insulation known to man, will permit you *great savings* in application costs due to its extreme adaptability to irregular and hard-to-reach surfaces.

As an insulation for round, elliptical, or irregularly shaped ducts, it not only saves fuel but is an exceptionally efficient absorber of sound, thereby hushing disturbing noises transmitted throughout a building via the duct system.

Made of microscopically fine fibers of GLASS, which will neither burn, rot nor settle under vibration, Aerocor is adaptable to a wide range

of industrial applications such as the insulation of steam-traced lines, "nested" pipes, valve fittings, tanks, other irregular shapes.

Aerocor is available in space-saving, lightweight rolls and in a number of widths and densities (from .5 to 1.0 lbs. per cubic foot). For local sources and complete information, phone the FIBERGLAS branch office nearest you, or write to OWENS-CORNING FIBERGLAS CORPORATION, Dept. 113-J, P. O. Box 89, Santa Clara, Calif.

PACIFIC COAST DIVISION SALES OFFICES: Albuquerque, Denver, El Paso, Eugene, Fresno, Los Angeles, Phoenix, Portland, Sacramento, Salt Lake City, San Diego, San Francisco, San Jose, Seattle.

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Division of*

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HIGH TEMP.
INSULATIONS



LOW TEMP.
INSULATIONS



PIPE
INSULATIONS



ROOF
INSULATION



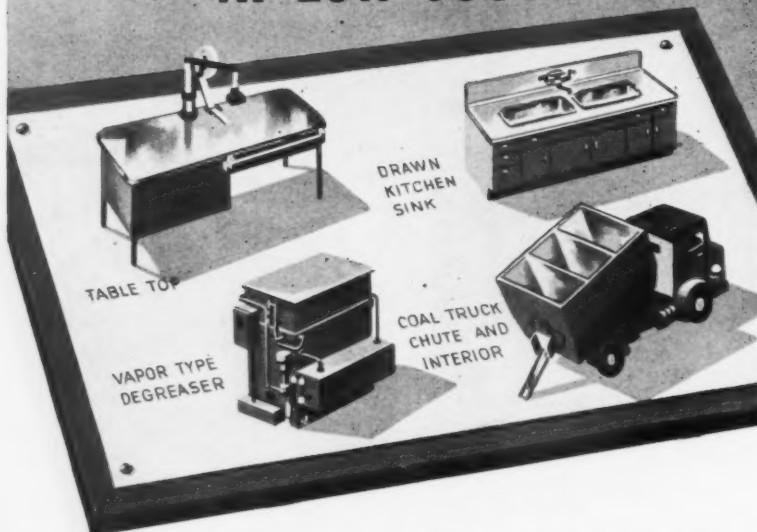
CENTRAL
SYSTEMS FILTERS



DUCT
INSULATIONS

*Fiberglas (Reg. U. S. Pat. Off.) and Aerocor are the trade-marks of the Owens-Corning Fiberglas Corporation for a variety of products made of or with fibers of glass.

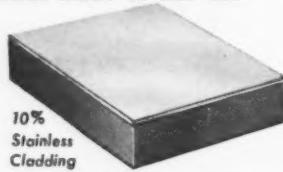
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Design Them Around PERMACLAD Stainless Clad Steel

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STAINLESS CLAD STEEL
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Other Products: A. W. ALGRIP Abrasive Floor Plate • A. W. SUPER-DIAMOND Floor Plate •
Plates • Sheets • Strip • (Alloy and Special Grades)



Strikebreaker Law Held Unconstitutional

UTAH'S "strikebreaker law," which requires that persons going to work in a strike bound plant first must register with the State Industrial Commission, has been declared unconstitutional by Judge Jeppson in the trial court on the grounds that its wording is indefinite and vague.

The case arose out of a strike by Teamsters Local No. 222 against three wholesale grocer firms in Salt Lake City last March. The companies continued to operate throughout the strike with non-striking and new employees. The Union lodged a complaint against one company. Eight non-registered employees were arrested for violating the act. Unions have used the act as a weapon to handicap operations during a strike, and employers have looked upon it as a legalized blacklisting of employees.

Atomic Touch Tells Paperboard Thickness

A CONTINUOUS SHEET of paper board at Fiberboard Corporation's Antioch, Calif., plant speeds past a General Electric Beta-ray Thickness Gage (arrow and inset) which "feels" the board by means of an ingenious application of atomic radiation.

Beta rays are beamed through the edge of the board; since varying thicknesses of board interrupt varying amounts of rays, the gage's electronic brain can detect changes in thickness without actually coming in contact with the product.

Variations as slight as one per cent are automatically recorded. This is of particular importance in the manufacture of milk carton board which is later folded in machines operating at extremely close tolerances.

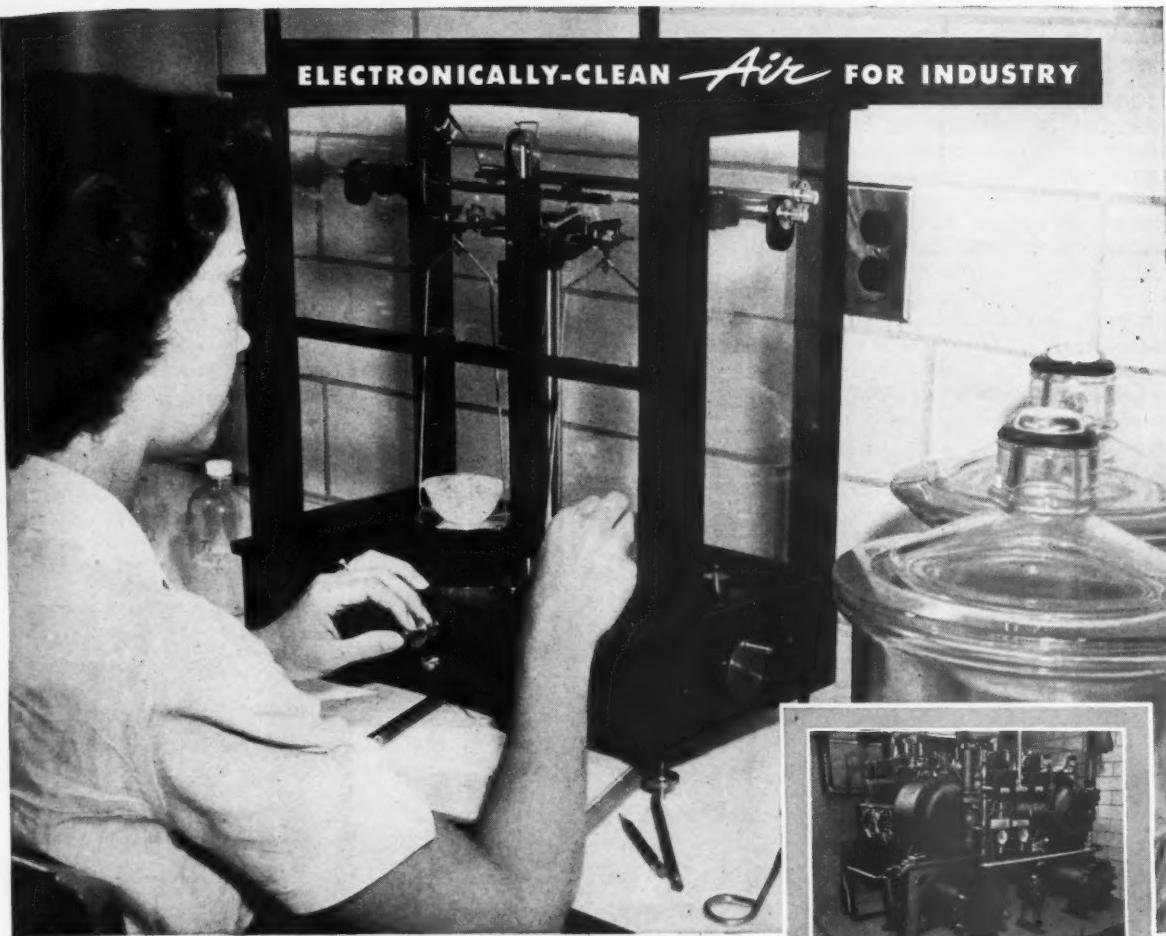
Pacific Northwest Personnel Conference

"POSITIVE Personal Planning" is the theme for the 13th annual Pacific Northwest Personnel Management Conference in Portland, Nov. 1-3 at the Multnomah.

Dr. Dwayne Orton, director of education for IBM, will be the speaker.

Other speakers are M. M. Anderson, Alcoa vice-president; George A. Bowie, Firestone Rubber; A. D. LeMonte, public relations director, Mullins Mfg. Corp.; Dr. Robert K. Burns, Industrial Relations Center, University of Chicago; John Schrade, Harding College; Dr. U. G. Bubach, Lewis & Clark College; M. J. Kane, vice-president of research, TWI Foundation; W. C. Mainwaring, vice-president B. C. Electric Co.; Austin Fisher, management consultant, Fisher & Budge, N. Y.

ELECTRONICALLY-CLEAN *Air* FOR INDUSTRY



M & R Dietetic testing lab, where clean, conditioned air plays a vital role.

HOW SUPER-CLEAN AIR GUARDS QUALITY AND PRODUCTION

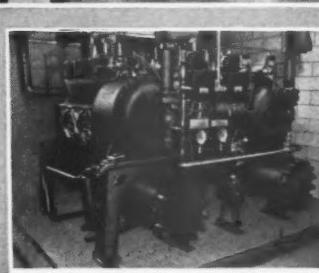
Manufacture of baby foods requires exceptional standards of cleanliness. Every vessel must be sterile—and the air itself pure. M & R Dietetic Laboratories, makers of CEREVIM baby cereal and SIMILAC powdered infant food, insisted on *really clean* air. So PRECIPITRON®—the *electronic* air cleaner—was installed. Now they remove harmful contaminants so small that they can be seen only with the finest Ultra Microscope. PRECIPITRON also increases production. In one separating process, 20% of the dried milk was once discarded because air-borne contaminants

passed through mechanical air filters. Now 100% is useable, and is better graded too. In the testing lab, precisely-controlled humidity and temperature help improve product uniformity and increase the efficiency of the technical staff.

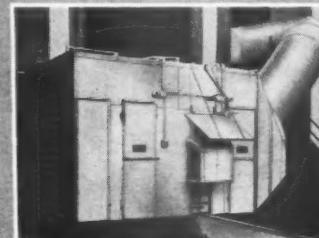
There's a complete line of Westinghouse equipment to help you *put air to work*—with electronic air cleaning, air handling, or air conditioning. Contact your local Westinghouse-Sturtevant office, or write Westinghouse Electric Corporation, Sturtevant Division, Hyde Park, Boston 36, Massachusetts.

YOU CAN BE SURE...IF IT'S
Westinghouse

J-80229



Westinghouse Hermetically-Sealed air conditioning compressors can be installed in an unventilated space.



PRECIPITRON stops dirt before it enters the building. Its efficiency is, triple the best mechanical cleaner.



There's nothing to remove from PRECIPITRON but dirt. It's periodically washed down drain with a water hose.

Back to 'Bama For Paint Tests

MOREHOUSE INDUSTRIES, manufacturers of Speedline machinery, are sponsoring a research project to be carried out at the University of Alabama, under the auspices of the University's new paint and protective coatings department. The Los Angeles machinery company will test a number of paint and pigmented coating systems with its milling equipment using special Carborundum grinding stones.

Results of the tests will determine

the effects of the particle size of the Carborundum in the stones, rates of feed, components of various systems, viscosity of feed material, effect of vehicle solids on the handling of the material, use of wetting agents and dispersion aids, and other data beneficial to industry using this equipment.

Pickling Baskets Made From Left-Overs

PICKLING BASKETS made from stainless steel scrap, that are proving to be time and money savers as well as scrap utilizers, have replaced wood-

en baskets formerly used for this metal treating process at Ryan Aeronautical Co., San Diego.

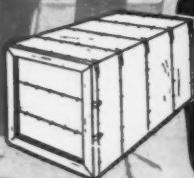
Wooden baskets, previously used, had to be weighted with lead to cause them to submerge in the pickling baths. Because lead was readily attacked by the acids in these solutions, it was necessary to enclose it in stainless steel coverings. Also, wood soon rotted away, leaving contamination in the tanks. When Ryan changed its pickling process for jet engine parts to include high temperature molten salt baths, wood had to be discarded, since it would be ignited by the heat of the baths.

New baskets are fabricated from scrap steel 5/16 in. thick, produced in the punch-pressing of exhaust system flanges at Ryan. Steel is straightened, cut to length and arc-welded together to make these containers that stand up

Crates should be custom Fitted and Shaped to your Product!

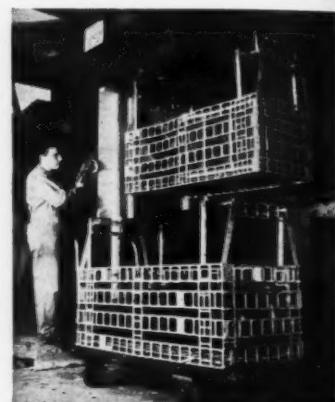
Fit the shoe to the foot...and not the foot to the shoe! A rule sometimes overlooked in crating a "difficult" product. Yet a superior Martin Wirebound crate can usually be custom-designed to protect your specific product, then volume-produced at a unit cost comparable to "standard-sized" nailed crates. Martin Container Engineers will gladly review your product—including those that feature uneven profiles or vulnerable parts—and develop a masterfully designed protective container for your approval. No obligation. Let's discuss it today!

Container perfection means product protection



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Box Co.
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CONVENIENT SALES OFFICES: WHITTIER, SAN JOSE, CALIF.;
OAKLAND, ORE.; SEATTLE, WASH.; TOLEDO, OHIO



A RYAN-BUILT stainless steel basket full of exhaust system parts is started through a series of extremely corrosive pickling bath tanks.

under attack from molten salt and the hot and cold combinations of nitric, sulfuric and hydroflouric acids.

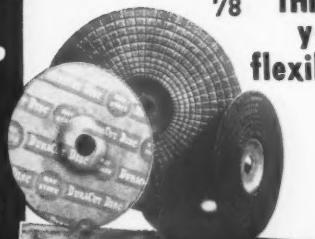
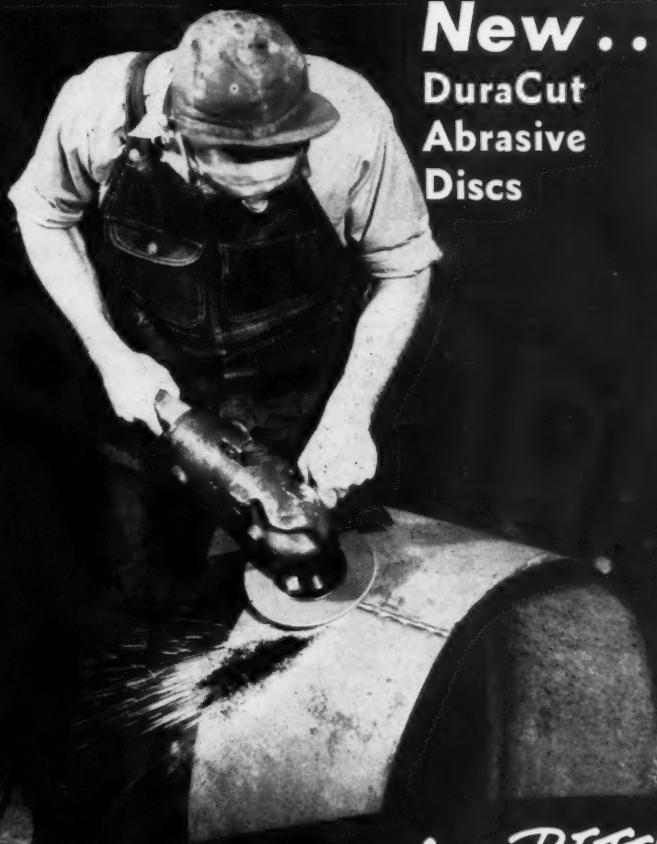
Steel baskets last three months (wooden baskets had a ten-day life span), and therefore save substantial amounts of money for the company. Fully as important, utilizing scrap steel for this purpose means worthwhile conservation of the metal.

Baskets are capable of carrying up to 1,000 lb. of parts; have removable bottoms which are easily released. Maximum drainage is obtained in their construction so that no salts or acids will be dragged out of the baths.

Ryan places baskets on mobile dollies and loads them with parts directly from the heat-treating furnaces. They are then transported to the acid tanks and processed through pickling without handling of the parts. This steps up production time and eliminates labor involved in loading and unloading parts dollies.

**New...
DuraCut
Abrasive
Discs**

**1/8" THICK
yet
flexible**



*Blending weld on
stainless steel tank.*



*Smoothing weld
bead.*

IF YOU'RE LOOKING for a BETTER WAY...

... to blend welds and similar jobs, at a lower cost with greater productivity, investigate the vast possibilities of DuraCut Abrasive Discs. These new multiple layer abrasive discs, are *flexible, strong, safe*, offering many advantages over the ordinary single layer type of coated discs.

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- INCREASED LABOR SAVINGS (less disc changing)
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- 10-25 TIMES LONGER LIFE (over $\frac{1}{4}$ million more cutting particles)
- WITHSTAND LONG CONTINUED FLEXING (extra matted reinforcing)

*The only really flexible
grinding wheel
ever offered!*

Order Today for a Trial:

Sizes available for immediate shipment
 $7 \times \frac{1}{8} \times \frac{5}{8}$ } In any of these
 $9 \times \frac{1}{8} \times \frac{5}{8}$ } grit sizes: 36, 54, 80



*Removing rust and
scale.*

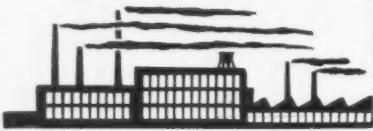


*Removing weld
spatters.*

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Ask for the name of our West Coast Distributor nearest you.

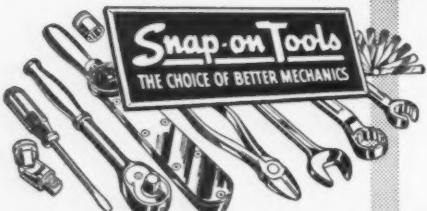
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direct to you—
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Ever needed tools fast? What plant hasn't? To meet just such emergencies—as well as the year-round normal tool needs of all Industry—Snap-on maintains the 41 factory branch warehouses listed here. The complete Snap-on line offers more than 4000 tools for industrial production and maintenance. Snap-on factory branches make them quickly available to factories and shops everywhere. Snap-on branches are staffed with tool specialists experienced in the needs of industry. A phone call brings Snap-on service right to your door...try it! For latest Snap-on Industrial and General Catalog, write—

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Keep 'Em Inside If You Want to Keep 'Em

AUTOMOTIVE VEHICLES stored outside require approximately twice as much attention in order to keep them in satisfactory appearance, according to H. B. Wylie of San Diego Gas & Electric Co., reporting at a transportation conference of the Pacific Coast Gas Association. He also said his company used water instead of solvent in sanding vehicles in preparation for painting, because they were able to get a hard finish and the water was easier on the hands of the workmen than the solvent.

The conference agreed in general on the following points:

1. Washing and painting should be done through visual inspection by qualified personnel and not on a time basis.
2. Detergents or liquid soaps are used for washing with hand application rather than mechanical.
3. Only first quality synthetic enamels should be used for repainting.
4. Caution should be used in polishing with silicone type polishes. Must be removed (an extremely difficult job) to get a satisfactory paint job.

A Hot Industrial Finish

USE OF HOT-SPRAY lacquer for finishing metal parts (including aluminum) at Douglas Aircraft Co., El Segundo, Calif. plant, (1) cut finishing time about 50 per cent, (2) saved the equivalent of two gals. of lacquer and eight gals. of thinner per plane, (3) eliminated some of the finishing processes formerly required, (4) stepped up production, and (5) provides a better protection in service.

According to a report from Hercules Powder Co., manufacturers of the nitrocellulose ingredients from which lacquers are made, the use of hot-spray lacquer is growing steadily.

Douglas process engineers report a time saving equivalent to 27½ hrs. in finishing AD-4 airplanes. Booth time alone was cut nine hrs., or one-third, with present crews and equipment.

Where two coats of finish were required before, one coat of hot lacquer now gives required film thickness. This eliminates "scuff sanding" and the hazard of sanding through the finish on rivet heads and skin laps.

Thorough tests, to meet Navy specs, proved to Douglas that hot-sprayed lacquer has better flow-out, decreases tendency to sag, blush or orange peel, and provides a smoother, glossier appearance. Salt spray and weatherometer tests showed the hot-sprayed film to be superior.



Trade Mark of

**non-deteriorating..weatherproof
windproof..lightproof
dustproof..mothproof
vermin-proof**

Specify and Use Glas-Kraft
For These Things:

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- C. As FLOOR INSULATION and a VAPOR BARRIER.
- D. As a DRY SHEET under ROOFING.
- E. To protect EXTERIOR WALL SHEATHING.
- F. To Back Up STUCCO with SOLID WOOD SHEATHING.
- G. To Back Up STUCCO without WOOD SHEATHING.
- H. TO CURE AND PROTECT CONCRETE. (Steps, Slabs, Aprons, Walks, etc.)
- I. OVER SUBFILL UNDER CONCRETE. (Floors, Slabs, Walks, Aprons, etc.)
- J. To protect FINISHED FLOORS (Concrete Wood, Tile, Terrazzo, etc.) from traffic and work damage, pending completion of the entire job.



3 GRADES OF GLAS-KRAFT

GRADE A

Finest Quality. Exceptionally waterproof. Finest Northern Kraft, chemically treated to give increased strength when wet and to improve resistance to abrasion, scuff, mildew, fungus, dry rot, etc. All-directional glass-fiber reinforcement for the ultimate in strength.

GRADE B

First Quality Northern Kraft. Same specifications as Grade A except that the kraft plies themselves are not chemically treated.

GRADE C

A Glas-Kraft Development . . . Southern pulp converted into kraft by a northern mill bonded and reinforced with glass fibers for use where strength and unusual waterproofness are required. Considerably lower in cost.

EXTREMELY WATERPROOF, LAMINATED GLASS- REINFORCED PAPER



Available in Roll,
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AMERICA'S MOST MODERN PAPER FOR BUILDING AND CONSTRUCTION

Glas-Kraft is smooth in appearance, light in weight and tough in character. Hard to puncture and difficult to tear, Glas-Kraft has all-directional reinforcement. This comes from miles of uniform glass fibers swirled into a special waterproof laminate between two plies of fine specification kraft and then permanently bonded under heat and pressure. Glas-Kraft costs no more than other high quality reinforced building and construction papers. Yet it offers many advantages.

The kraft surfaces are non-staining. The glass fibers are non-hygroscopic and will not absorb moisture. They can't rot, shrink or spoil. Mold and vermin can not live on them.

Glas-Kraft has outstanding resistance to puncture, tear, abrasion and scuff. It has high tensile strength, is consistent in weight, uniform in caliper. Best of all, it provides *positive* all-weather protection. It is exceptionally waterproof.



Trade Mark of

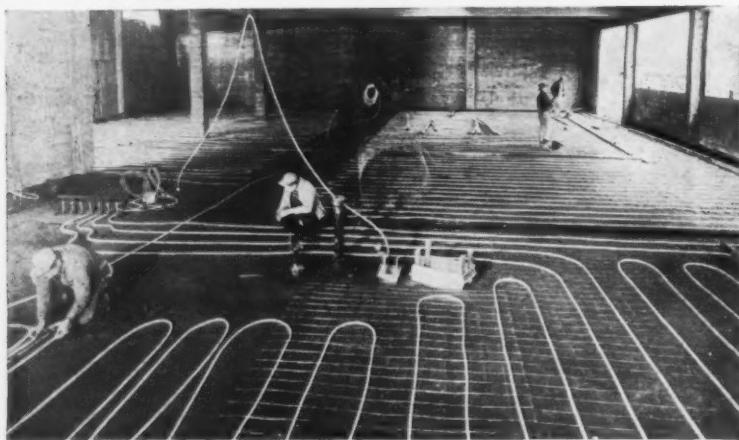
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A New Floor Plan for Cozy Plants, Old or New



CARLON "C," a plastic tubing that resists rot, rust and electrolytic corrosion, is being used for radiant panel floor heating systems in old and new buildings with excellent results, according to the manufacturer, Carlon Products Corp., Cleveland, Ohio.

When Carlon "C" tubing was installed in the Portland, Oregon, plant of Pump, Pipe and Power Co., Western distributor for Carlon Products, it was first laid on rough flooring of the

new buildings, and held in position with hooks while return bends were made. Wire mesh was then placed over tubing and mesh and tubing were tied together at 2-ft. intervals with binder twine. Hooks were removed after tubing was secured, and entire system was filled with water to eliminate air in the line. Pressure was maintained on system to prevent collapse of plastic tubing while 2½-in. of concrete were poured.

This same process was applied to the old buildings, by placing tubing on top of old floor surfaces, and pouring concrete over it.

Carlon tubing is well suited for this type of installation because it remains flexible at temperatures ranging from -70 deg. to 140 deg. F., resists interior buildup, and can be furnished in extremely long lengths that require a minimum number of fittings. It was installed in the Portland plant buildings in approximately half the time normally required with other types of tubing.

Taking the Danger Out of Tin Cans

EVERY DEPARTMENT has some use for empty tin cans. Many of these uses are such that the purchase of a special receptacle would be entirely unjustified. It may be a good idea to use some of the cans you would otherwise discard: BUT make them safe first.

According to the Seaman's Safety Guide, published by the Accident Prevention Bureau of Pacific Maritime Association, a good case can be made out of opening all cans with an opener that leaves a rolled edge all the way

HYDROSCALE

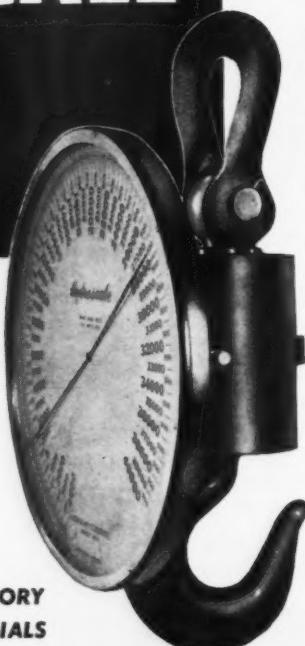
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Hundreds
of Jobs*

- Hydraulic accuracy
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- 3 Dial sizes: 12, 24, 30"
- Models 500 to 100,000 lbs. capacity

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AND IN CHECKING INCOMING MATERIALS**

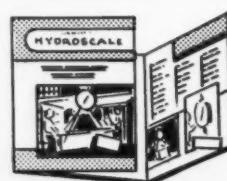
HYDROWAY SCALES, INC.

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**a money, time
and space saver**

• This hydraulic crane scale weighs the load as you lift it to move it— Makes weighing so simple that it's done where it might otherwise be neglected. Cuts manpower and equipment tie-ups. Eliminates the need for weighing stations.



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The **RIGHT** ANSWER



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2 Cal-Western's
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LIFE INSURANCE
COMPANY

HOME OFFICE: SACRAMENTO

GROUP INSURANCE SALES OFFICES IN
PRINCIPAL WESTERN CITIES

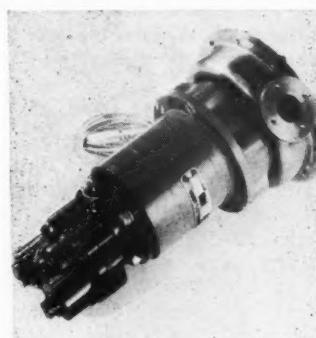
around, even if the can is only to be emptied and discarded. Certainly, any can that is to be used again should have no sharp edges or points. Perhaps in some cases these are left by tearing off a top which had not been completely cut loose when it was first opened.

Cut fingers, which may become seriously infected, can be avoided by seeing that all cans are opened completely and with rolled edges the first time. Cans which are opened with a key have a sharp edge and should be discarded at once.

If these practices are followed, any can a man finds will be safe to use.

"Rocketeering"

AIRESEARCH Manufacturing Co., Los Angeles, has developed an auxiliary power package for guided missiles, which will operate such elements as stabilizers, air surface and guidance controls during supersonic flight. Package consists of a partial admission ax-



AN AIRESEARCH missile power package—about the size of a milk bottle, it produces enough power to operate a super service station.

ial flow turbine, a reduction gear box, a 12,000-rpm. induction generator and a gear type hydraulic pump.

Current performance figures are 2.75 gpm. of oil at 1,500 psi., and 750 watts of 400 cycle, 115/208 volt, 3-phase alternating current. However, hydraulic pressure can be doubled and electrical output increased to 1300 watts with minor changes in turbine nozzle and gas generator.

Since no brushes or slip rings are used, it is well fitted to missile application where large changes of altitude are the rule, and radio noise problems critical. Rugged construction of this 16-lb. package enables it to withstand severe acceleration, shock and vibration encountered in missile operation.

Use of Pear Waste

SUGAR in pear waste has been converted into alcohol with 90% efficiency.

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Machine, sheet
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screws, carriage
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Every purchasing agent knows the importance of dependable sources for parts. Slow shipments cost time and money. Schwartzman concentrates on rapid, accurate fulfillment of all orders anywhere in the United States.



FREE catalog will be sent on standard items to make ordering easy. Consultation service available on "special" items.

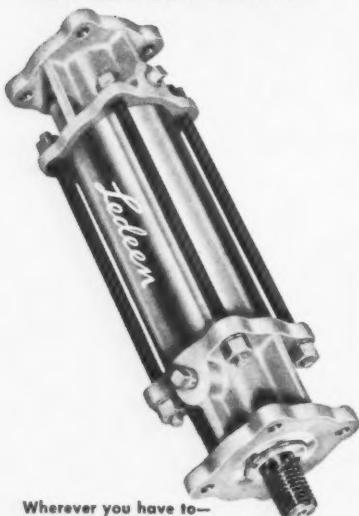
A few choice territories still open for distributors.

J. Schwartzman

MFG. AND SUPPLY CO.

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INCREASE PRODUCTION WITH Ledeen CYLINDERS



Wherever you have to—

- PUSH or PULL**
- LIFT or LOWER**
- PRESS or SQUEEZE**
- TIILT or TURN**
- OPEN or CLOSE**

Ledeen cylinders provide positive, dependable power and pressure in straight line motion. Designed for air, oil, or water operation, they are uniform in design and construction, affording a wide number of varieties and adaptations. Ledeen cylinders are easy to install, occupy minimum space, and are built for long, economical service.

Standard Ledeen cylinders and mountings are available from distributors' stocks in major cities. Special cylinders if required. J.I.C., of course.

**Ledeen Cylinders
are GOOD Cylinders**

Write for Bulletin 500

Ledeen Mfg. Co.

1600 So. San Pedro
Los Angeles 15, Cal.

ULTRASOUND

... begins on page 50

ment involving the use of ultrasonic cavitation effects was recently announced by Mullard Electronic Products, Ltd., of England. It is, briefly, a soldering iron with a magnetostrictive transducer for the vibration of a bit which is heated in a more or less conventional manner with alternating current.

Purpose of the vibrating bit is to provide cavitation effects so as to eject oxides and other impurities from molten solder materials, and this in turn has made it possible for several Western manufacturers to use the gun for such unprecedented tasks as the soldering of aluminum alloys.

According to E. A. Moore of Stainless Steel Products, Inc., at Burbank, Calif., a small ultrasonic siren has been experimentally used at frequencies exceeding 300,000 cycles per second to provide heating effects for the welding of ferrous alloys with high melting temperatures; but, as yet, the industrial practicability of this type of equipment has not been determined.

Vibrating Cutting Tools

Machine-cutting tools—capable of threading, drilling, forming, and otherwise fabricating exceptionally-brittle materials, such as the "superalloys" and ceramics—have been recently developed by Cavitron Corporation of New York City. First Western use is found at Coors Porcelain Co., Golden, Colorado. Operation of these tools is said to involve the use of intense magnetostrictive vibrations, averaging about 27,000 cycles per second, to actuate cold-rolled steel or comparable types of malleable-metal cutters.

Russian scientists have claimed considerable success in the use of ultrasound for the extermination of bacteria in milk, the destruction of small insects and rodents, and the stimulation of plants so that the latter will yield more food in less time. However, experiments along the same lines (as conducted by the U. S. Department of Agriculture in various portions of the United States), indicate that the Russian claims are most likely the result of small-scale experiments—not large-scale production operations, although the latter are within the realm of future possibilities.

Ultrasound for Production

Other ultrasound applications which may turn out to be practical in mass production as well as in laboratory work have been described by research workers (at Battelle Memorial Insti-



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American Felts available include those listed in Armed Forces Specifications, which can be met exactly. The Boyd Company not only supplies American Felts in sheet and roll form, but also operates two skilled cutting shops, which produce cut parts to exact dimensions, ready for assembly.

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tute, University of California, etc.) as follows:

(1) The acceleration of electroplating operations.

(2) The measurement of metal elasticity.

(3) The kiln-drying of green lumber in about 5 minutes, whereas 3 weeks are now required.

(4) The aging of alcoholic beverages in a matter of days, whereas years are now required.

(5) The treatment of human ailments—ranging from cancer to gallstones and whooping cough.

(6) Better manual guns for metallizing operations and for the spraying of organic coatings.

Ultrasonic? Supersonic?

As heretofore intimated, the terms "ultrasonic" and "supersonic" are synonyms; but, since the end of World War II, engineers have demonstrated a growing tendency to use the word "supersonic" with exclusive reference to the problems of faster-than-sound flight. This distinction is difficult to understand in a sense, because an airplane in high-speed flight can generate intense sound vibrations the same as an ultrasonic siren.

However, the new connotation is understandable in terms of engineering objectives; for, while most engineers are now interested in finding uses for the ultrasounds which tend to limit the speed of modern aircraft, the principal problem in designing a high-speed airplane is to create a lightweight structure which will be impervious to sonic vibrations.

Packaging Exposition Planned for Next Year

WESTERN PACKAGING and Materials Handling Exposition (the fourth) will be held in Los Angeles in the fall of 1952, according to Clapp & Poliak, Inc., exposition management firm that founded the show in 1948.

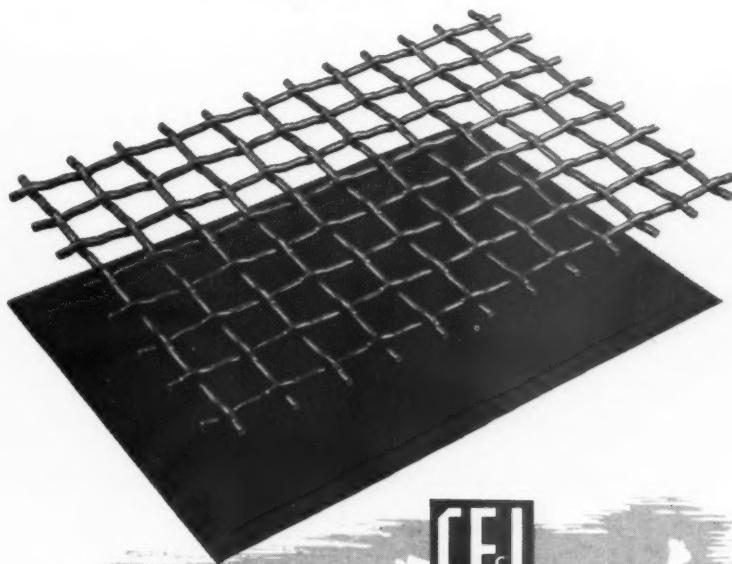
It is anticipated that the 1952 exposition will be the largest of its kind ever held in the West. More than 100 companies will participate in the exhibit. Exact dates will be announced at an early date, pending completion of negotiations for the exhibition hall and for necessary accommodations for exhibitors and visitors.

According to Clapp & Poliak, "The solid success of the Exposition, which was so dramatically demonstrated in the three previous showings, assured its establishment as a permanent institution in the Far West. The exposition has proved itself to be an agency of great economic value to Western business and industry."

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Since 1859

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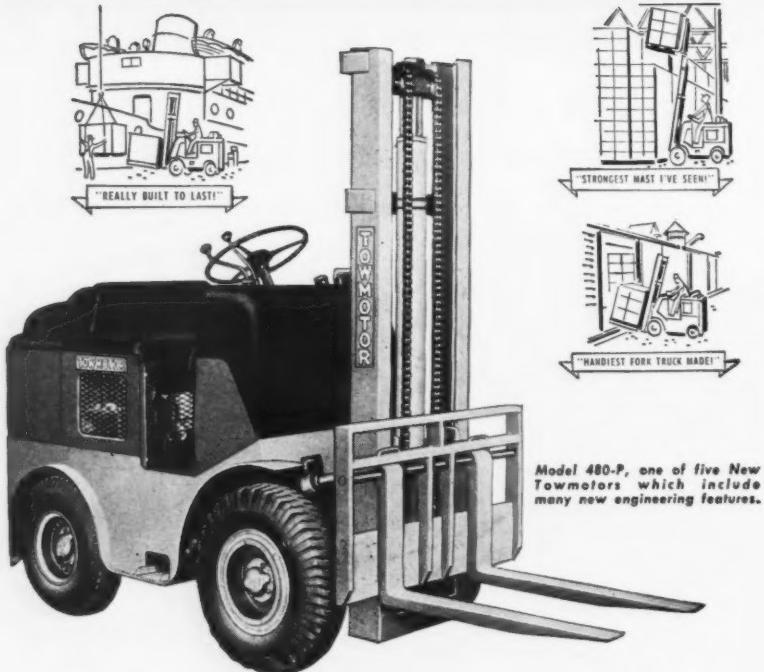
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CAL-WIC INDUSTRIAL SCREENS

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No wonder the new **TOWMOTORS** are such a sensation
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- Drop forge beam steering axle
- Functionally styled cowl
- Full vision instrument panel
- Precision controls in easy reach
- Super-strength forks
- Maximum free lift
- Engineered tire equipment
- Double universal joint
- Precision mast construction
- Maximum operating comfort
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COMPANY _____

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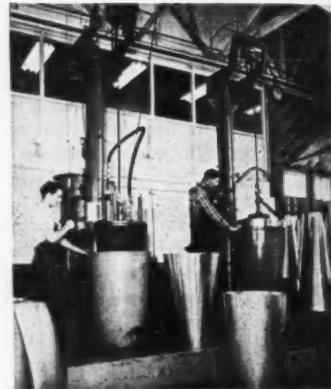
CITY _____ STATE _____

**New Forming Process
Cuts Cost 75%; Time 80%**

WITH DEVELOPMENT of a new forming process, Pastushin Aviation Corp., Los Angeles, notes savings of 75% in costs and 80% to 85% savings in time in fabrication of aluminum jettisonable fuel tanks for the Air Force.

This process is named for Charles Demarest, Pastushin's chief tooling engineer, who developed it because the firm wanted to form the tanks cheaper and faster than by the conventional methods using drop hammer, stamping press, or rolling. Pastushin used to form these tank sections by spinning, and each one took 15 to 20 min. With the Demarest process, tank sections are formed in a single operation in less than 3 min. each.

Using an elevating mechanism and expanding rubber die, the new process stretch-forms steel or aluminum cones and cylinders into forms with spherical contours such as cowl-



WITH STEEL LID locked (right above), rubber forming die is expanded by 400-psi. fluid pressure to form fore and aft sections of jettisonable fuel tanks. Below, completed fuel tank, in production by Pastushin Aviation Corp. of Los Angeles for the U. S. Air Force.



ings, propeller spinners, missile casings and practice bombs.

First step in forming by the Demarest process is to form a cone and seam weld it by the Heliarc process. The cone is placed inside a Meehanite die holder weighing 3,500 pounds and designed to withstand pressure of over 1,500 psi. The rubber forming die is lowered into the sheet metal cone.

With a steel lid securely locking the

Toothpaste-Tube Techniques Saving 75% On Aircraft Parts Production

WHEN A SLUG OF METAL is placed in a punch-press mould or die and struck by a punch with such force that it flows like butter into the desired shape, engineers call the process impact extrusion. This process, relatively simple with soft metals such as lead and pure aluminum, has long been employed in manufacturing containers for toothpaste and shaving cream.

However, Lockheed Aircraft Corp., Burbank, Calif., has been successful in applying this impact extrusion to mass production of high-strength aluminum alloy aircraft parts, six times tougher than metals commonly worked. A 1,000-ton Bliss impact extrusion punchpress, largest in the aviation industry, which is soon to be installed at Lockheed, will produce parts as large as 12 sq. in. in cross section and 24 in. in length. Fifteen small parts are slated for manufacture by this method, and it is estimated that this will mean a saving of around \$52,000 a year for Lockheed. When plans are complete, 177 items will be manufactured in this way, for additional economies totaling hundreds of thousands of dollars.

In addition to being less expensive, impact extrusions are stronger than parts machined on a lathe or drill press from castings, since this method causes a cold working of the metal with a resulting increase in tensile strength. Some parts can be made with only a quarter of the bulk metal previously used, because the waste created in boring, drilling or cutting is eliminated with impact extrusion.

rubber forming die in place, the rubber die is expanded by pumping fluid from the reservoir until 400 psi. pressure has been attained. Expanding rubber of the die stretches the straight-sided cone into a curved part.

After the fluid has been pumped out, the die lid is unlocked, the bag is elevated out of the die, and the formed part removed. The formed part is free of wrinkles and tool marks.

Parts formed by the Demarest process require only one longitudinal seam weld and are uniform in skin

thickness. No degreasing is required and setup time is very low. This Demarest process is comparable in scope to the Douglas Aircraft Co.-developed Guerin process which revolutionized metal forming techniques in the 1930's.

Glycerine Background For the Movies

GLYCERINE has found a new use in the movies. Now, compounded carefully with Methocel and water, it is used in place of usual starch pastes to

apply wallpaper to "hard flats" (large plywood units that form the walls of movie sets). Known as "peel paste," this new composition is developed by Motion Picture Research Council.

Chief advantage of the paste is that it holds the paper in place for as long as required, yet enables the paper to be stripped off easily when the set has served its brief purpose in front of the cameras. Now, the same flats are used many times without going through the time and money-consuming processes of burning, scraping, steaming, or soaking in alkaline solutions.

Get more work done

SPANMASTER CRANES

Plus values of SpanMaster Cranes help you keep production lines moving faster . . . better. Emphasis is on functional design. Old fashioned geegaws and elaborate castings have been eliminated. Modern features incorporate an entirely new in-line suspension principle and flexible mono-yoke load bar design. SpanMaster Cranes are built to provide efficient operation, durability and low maintenance cost.

SpanMaster underslung Cranes are built in standard models to 10-ton capacity; SpanMaster top-riding Cranes in standard single girder to 10-ton; double girder to 25-ton.

SpanMaster Engineers will be glad to show you all the advantages of these new cranes. Write for brochure.

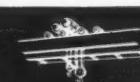


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NEW MATERIALS & EQUIPMENT

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Use postage-paid card following page 102
to obtain further information on products de-
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on following pages . . .

Hold Tight

Features claimed: Marvic tool holder is a very rigid tool. Cuttings come off in ribbons, not chips. Six of these tool holders can do any operation possible on an engine lathe,

as compared with the 20 to 30 tool holders required with other brands. Tool holders are changed on the Marvic with a quick vertical motion. Marvic can perform on an engine lathe up to 70% of the operations requiring use of a turret lathe, with repeat performance.

Vertical adjusting screw makes centering easy and positive, eliminates shimming, thus saving time.

Available from: Lebo Industries, Inc.

E-1001

One of the Roving Kind

Features claimed: This new type of portable furnace, which requires no chimney, has many industrial uses. It

can be used for such jobs as drying paint and plaster as well as for a zone heater for shops, hangars, warehouses, loading platforms, wash racks, store rooms. It burns a gallon of furnace fuel an hour and develops 140,000 Btu. of heat. Heat is blown out on a floor area of about 25 ft. radius. No vent, ducts or oil pipes required, as easily handled as a hand truck. Tank burner, blower, pump are all mounted as a unit.

Available from: Chimney Furnace Western Co.

E-1002

Look for the Nylon Lining

Features claimed: "Nylined" bearings were developed to overcome several limitations which restrict use of plain injection-molded or machined nylon bearings. These bearings consist of an outer sleeve of inexpensive metal and a relatively thin lining of nylon bearing material. Nylon liner is retained in outer sleeve in a manner which will permit it to expand and contract circumferentially around inner periphery of outer sleeve. Liner is provided with a narrow slot or compensation gap which interrupts circumference. In applications where lubricants can be used, one or more annular grooves are provided on inside of outer sleeve to form storage wells for grease or other lubricants which are evenly distributed through compensation gap. Some special advantages are that no wide clearances are necessary for dimensional changes due to thermal expansion, nor is there a cold flow or creep problem. There is no danger of seizure due to stress deformation.

sion, nor is there a cold flow or creep problem. There is no danger of seizure due to stress deformation.

Available from: Thompson Industries, Inc.

E-1004

Making a "Hit"

Features claimed: Working at 120 psi., this air hammer strikes up to 6,000 blows per minute, with maximum force, or may be metered to any lower speed or striking power



by means of a simple finger trigger action. Hammer has a three-point, ball-bearing chuck which locks tools in working position. Driving piston is only moving part. Air hammer weighs just over two pounds, and is designed for performing medium-heavy duty work in general shop and maintenance operations. It comes singly or with specialized tool kits. Sixty different tools are available for use with this model, the G200.

Available from: Salsbury Corporation.

E-1005

One for the Road

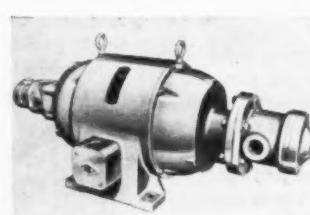
Features claimed: The "Trucker" series of gasoline fork trucks, specifically designed for operation in and around highway motor trucks and freight cars, combines low weight, low overall height and high maneuverability for operation in close quarters. All controls on these fork trucks are automotive type. Clutch, accelerator, gearshift, and brake are in conventional positions while controls for hoisting, lowering and tilting forks are located in close proximity to steering wheel. Hydraulic brakes are included. Power impulses from engine are transmitted through triple reduction spur and hypoid gears to drive axle. Drive axle is enclosed in an oil-tight housing and is full-floating type with involute spline drive shafts.

Available from: Yale & Towne Manufacturing Co.

E-1006

An Easy Mount

Features claimed: This new hydraulic pump motor features a new system of direct mounting between pump and motor, which is standardized and adaptable to all makes of pumps. Automatic precision alignment is assured for every installation. All motors are supplied with machined endbell flanges, pre-engineered to fit registers on the pump mounting flange. This reduces original and maintenance costs. Installation costs are re-



duced because the two flanges are bolted together rather than each unit being mounted separately. Fabrication of special mounting platforms for raising impeller shaft to drive shaft height are also eliminated. Overall dimensions

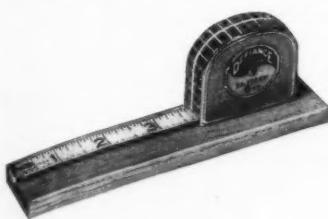
are reduced, assuring compactness and improved appearance. These pump motors can be supplied with pump flange mount on one or both endbells in all standard ratings of hp. speed.

Available from: Reuland Electric Co.

E-1007

"Pull Push" Rule

Features claimed: Defiance "Pull-Push" flexible steel rule comes in 6-, 8- and 10-ft. lengths. White enamel is baked on face of nickel-plated blade for extra wearing quality. Its $\frac{1}{2}$ -in. blade has large, black, easy-to-read numerals, is rigid for measuring straight and flexible for circular and angular surfaces. Chrome-plated "D" shaped case can be used



for measuring by adding 2-in. width of case to measurement on blade. Blade is replaceable.

Available from: Stanley Tools.

E-1008

Three Dimensions Are Better Than One

Features claimed: Instrumaster line of isometric, di-metric, trimetric ellipse stencils makes three-dimensional (axonometric) drawing easier, by use of definite scales. These isometric ellipse openings are isometrically correct projections, positioned correctly relative to horizontal, sized correctly as required isometrically to present a chosen

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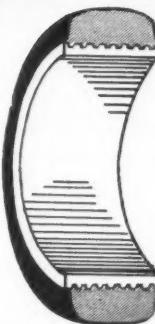


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FORK LIFT
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Install easily on all model fork lift trucks without design or wheel changes

Note these Features!



✓ Roll-Rite molds these tires in heated steel dies under 600,000 lbs. pressure.

✓ Process produces a dense, close grained tire HIGHLY resistant to cutting, chipping, abrasion.

High crown, heavy duty, cushion type tread gives maximum traction without grooves or tread indentation; steers smoothly; minimizes shock and impact on rough floor surfaces.

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circle, provided with center lines marked by isometric axes, made with allowance for pencil point or pen thickness. Dimetric ellipse openings are dimetrically correct projections, positioned correctly to axes, sized correctly for dimetric representation of chosen circle, provided with center lines marked dimetrically, made with allowance for pencil point or lettering thickness.

Available from: John R. Cassell Company, Inc.

E-1009

Clamp Goes on a Bender

Features claimed: A new accessory for benders known as the Quik-Lok clamp can be readily mounted by merely bolting it onto bender base. This quick acting clamp is ideal for use when bending tubing, angle, channel and extrusions as it securely locks these materials during the forming operation, thereby assuring a perfect bend. Its wide opening jaws allow easy removal of the formed part. It can be readily adjusted for any radius to 9 in.

Available from: O'Neil-Irwin Mfg. Co.

E-1010

Suspended Air Tools

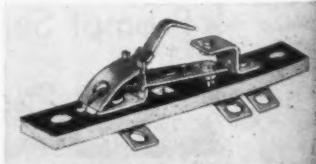
Features claimed: Wayne combined tool suspension and air supply hose reel is a compact, completely packaged unit, easily installed over work bench on high-speed production assembly lines. Pneumatic screw driver or other tool is suspended on hose which supplies air, requiring no cable suspension with separate air hose. Weight of tool is counterbalanced by spring tension of reel. Releasing tool lifts it automatically to a predetermined position directly over work spot. Automatic uptake of tool leaves both hands free to remove work from machine. A rubber bumper stop is provided to control length of travel when tool is released. Universal mounting brackets permit mounting on post, wall or hanging cable.

Available from: Wayne Pump Co.

E-1011

I'll Be Switched

Features claimed: Because these snap-action switches do not have expensive molded parts, they are low in cost. They employ over-center coil spring construction which permits a wide range of actuating pressures simply by specifying a spring element of the proper characteristics for any job. Switches are mounted on Bakelite panels, bracket and actuator materials are brass; blades are phosphor bronze and contacts are of fine silver. Model 200 has a release force of 5.5 oz. and requires an operating force of 7.5 oz. Model 2001 has release force of 2.7 oz. and requires operating force of 4 oz.



They have UL ratings of 6 amps, 125 volts AC and 3 amps, 250 volts AC. Special adaptations of these models are available with variations in contact size and materials, spring pressures, actuator shapes, mounting holes and multiple mountings on a single panel.

Available from: Cherry-Channer Corp.

E-1012

Speaking of Sprockets

Features claimed: This sprocket was developed to fit the "QD" V-belt sheave hub so that distributors could give immediate service without reborning on sprockets as well as V-sheaves. "QD" sprocket is taper-bored to receive the tapered hub. Bolts are provided to pull the sprocket into tapered split hub for a tapered drive assembly and a positive press fit on the shaft.

Tapered holes in sprocket permit use of pull-up bolts as jack screws to break tapered fit when dismounting sprocket. Set screw over keyway holds key in position. These sprockets are stocked at the factory in $\frac{1}{2}$ -in. pitch through $1\frac{3}{4}$ -in. pitch.

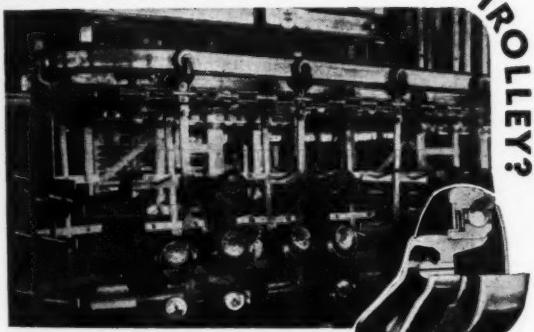
Available from: Fort Worth Steel and Machinery Co.

E-1013

Let Gravity Do It

Features claimed: This new type conveyor is designed to overcome almost any installation problem, with gravity or hand propulsion, using only three units: straight sections, 90-deg. curved sections, and adjustable trestles. Balanced

LOOKING FOR A BETTER TROLLEY?



One-half trolley illustrated

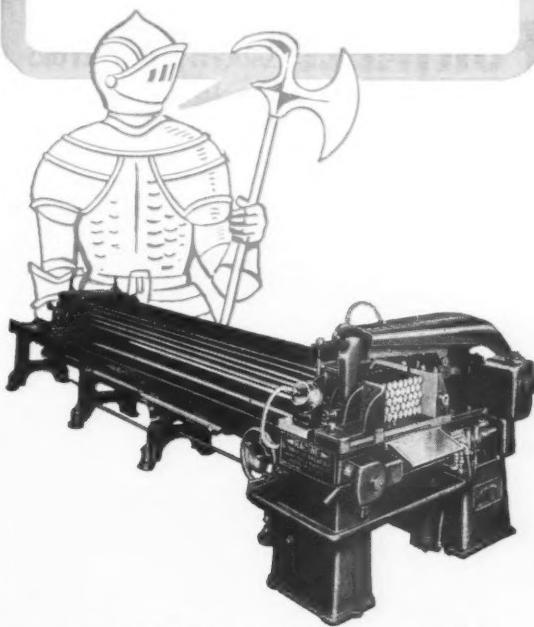
Here it is. Webb Overhead Conveyor Trolleys are the best money can buy. Proof of their outstanding quality, super strength and exceedingly long life is found in thousands of installations. Webb Conveyor Trolleys are offered in standard sizes for original installation or replacement. Webb dependability is a tradition backed by over 30 years experience.

Note the high carbon steel drop-forged swaged type bracket, retainer type ball bearings, double labyrinth grease seals, flangeless steel wheels with hardened and ground races.

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OLD MACHINES LIKE OLD WARRIORS SHOULD BE RETIRED



If your cutting-off machines are less than 100% efficient by today's standards — your costs cannot be competitive.

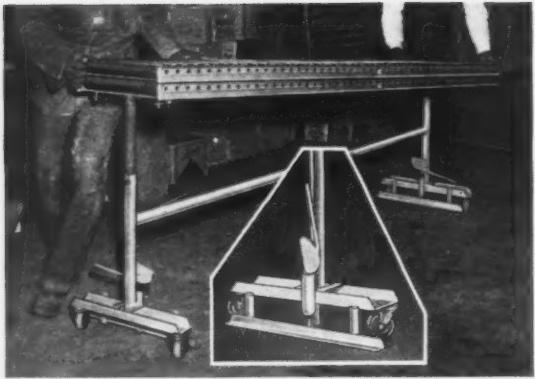
Stock wasted by inaccurate cutting — subsequent excessive machining time — short blade life — less cuts per hour, build costs that soon offset the price of a new power saw.

These costs, often unnoticed, are eliminated when you use late model RACINE Hydraulic Machines. Capacities — 6" x 6" to 20" x 20". Single purpose and automatic bar feed units.

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Also Mfrs. of Lovejoy Universal Joints and Lovejoy Variable Speed Transmissions.

rollers rotate on full length cold rolled steel shafts fitted with ball bearings. Shafts retain alignment and cross channels prevent frame from spreading under heavy loads. Rollers are spaced on 4 in. centers for maximum bearing surface and are raised $\frac{1}{8}$ in. above frame to accommodate packages wider than conveyor.

Available from: Lyon Metal Products, Inc.

E-1014

"Come Hither" Tools

Features claimed: These hand operated, load-releasing tubular multilift magnetools are used for entering small openings such as blind holes, and removing boring chips from castings. They are especially designed to remove steel chips or parts from other steel surfaces, and chips from metal cutting machines. Brass pickup tip prevents sticking. Models include both large and small magnets with wipe-off release or mechanical "pull - to - release" features. They are equipped with neoprene bumper rings to prevent magnet from grabbing sides. Magnetools are permanent and not electric, are resistant to water, oil and gasoline. Five different models are available.

Available from: Multifinish Mfg. Co.

E-1015

Class H Proof

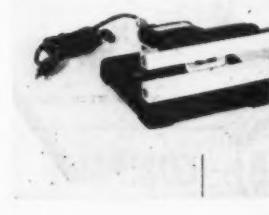
Features claimed: Quinterra Type 3 is an asbestos base, silicone-treated, high temperature electrical insulation, used for both inter-layer and wire wrapping insulations. It is defined as a Class H insulation by AIEE standards, for service at temperature 180 C. It is adaptable to a wide range of electrical devices including air cooled, inert gas and silicone filled transformers. It maintains a dielectric strength of at least 350 vpm. under continuous exposure to Class H Maximum temperature of 180 C. Furthermore, dielectric strength remains practically constant under high humidity since Quinterra Type 3 has high moisture resistance. It is completely inorganic and of closed structure. It is uniform in texture and thickness, very flexible for easy handling during application and resistant to cracking or crazing.

Available from: Johns-Manville.

E-1016

"Crimpmaster"

Features claimed: Crimpmaster Model "B" bench-type foot-operated heat sealer, saves packaging time for suppliers of machined metal parts, bearings, radio and electronic devices. Operated on 100-volt AC or DC, Crimpmaster provides an air-tight, liquid-tight and moisture-tight seal with thermoplastic materials. Serrated jaws, which are made in several sizes, reinforce heat seal with ten airtight horizontal serrations. Heat sealer is designed for mounting on bench or table, with foot control extending to the floor, and



is supplied with or without Teflon covered jaws, depending on type of material with which it is to be used.

Available from: Cleveland Lathe and Machine Co.

E-1017

Vise That "Yust Come Over"

Features claimed: A universal screw vise which instantly clamps round, tapered or irregular objects, is being produced in Sweden. Jaws of this "Sevo" vise consist of a



series of machined and ground flat plates which hinge or swivel in any desired direction to coordinate with the shape of the held object. Jaws are so designed that they can be moved in relation to each other, and work piece can rest on a contact surface underneath. By turning main screw, locking jaws position themselves and can then be locked to re-

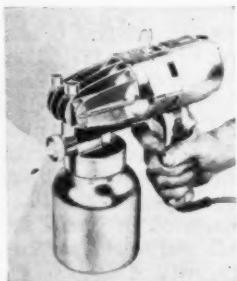
tain their directional position. Unlike conventional vises, the tightening screw requires only a slight turn, without imposing heavy torque to tightly grip the object. Vise jaws are made of precision ground Swedish steel. Distance between jaws is $2\frac{1}{2}$ and 5 in.

Available from: DeWilde-Jones, Inc.

E-1018

The Spray's the Thing

Features claimed: This portable sprayer weighs only 17 lb., and has its own built-in compressor. It represents a complete spray gun system including dual piston type, built-in compressor; self-lubrication, 10,000-rpm. motor; precision built mixing head; and gun, all built into one unit. Any liquid that is sprayable can be used. Unit is rated to spray at 1 qt. in 5 min. at 50 lb. air pressure. System is supplied with smart looking carrying case and spare aluminum cannisters, covers, gaskets, 3 interchangeable nozzles, strainers, respirator



with refills, brush, oil and instruction manual.

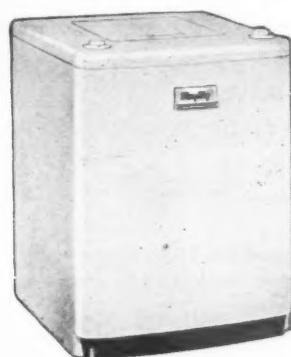
Available from: Kapner Hardware, Inc.

E-1019

Only Skin Deep

Features claimed: Although it is complicated to get the right cream for each of many different industrial skin irritations, it is not necessary to get a special cream for preventing each one of them. Most substances causing skin irritation fall into 2 or 3 groups. One group is composed of oils, solvents, thinners and other water-insoluble organic liquids. "Skin-Cote" No. 1, which is oil repellent, is recommended for use on jobs where oils are a hazard. It causes oil to form droplets and run off skin, preventing oils from dissolving skin's oils. Materials suspended in the organic liquid which might cause skin irritation do not contact the skin through this preventive barrier of cream. Another group of skin irritations is caused by water and

KUX
FIRST NAME IN DIE CASTING MACHINES

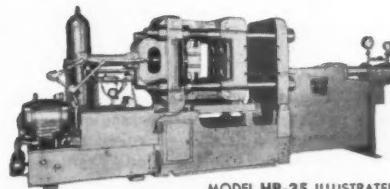


-helps make *Maytag*
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Since 1907, over 6 million Maytag Washers have been sold—far more than any other. The reason's clear; Maytag makes a wonderful washing machine . . . plus a full line of other home laundry equipment and famous Dutch Oven Ranges. It's logical that KUX, first name in die casting machines, should be used in the quality production of these superior products.

The use of KUX die casting equipment can put YOUR PRODUCT ahead—or keep it ahead. Reduce your manufacturing costs—increase the salability of your product, with quality die castings made on these rugged machines.

Write for illustrated catalog showing complete line of KUX Die Casting Machines.



MODEL HP-35 ILLUSTRATED
Hydraulically operated die casting machine for production of aluminum castings.

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Oakite Compound No. 33 removes oil at the same time that it removes rust. And at the same time, it prepares metal for painting.

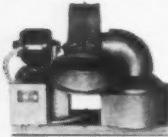
It's a great soak cleaner for steel, cast iron and aluminum; and great for hand-swabbing on metal surfaces too large to be soaked in tanks. It frequently eliminates pickling operations on moderately rusty steel.

FREE For a copy of Folder F7993 "New metal cleaner removes oil and rust in one operation", write to Oakite Products, Inc., 1001 E. First St., Los Angeles, or 681 Market St., San Francisco, Calif.

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The heat is blown under pressure through a small opening in the face of the unit in small volume and at high speed and beamed at the floor. The small volume of heated air is quickly mixed and absorbed by the surrounding, larger body of room air. This results in uniform heating comfort—draft free—without heat stratification at the ceiling; and achieves remarkably low cost heating as thousands of Kilbury installations prove.



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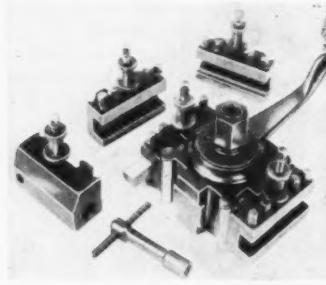
aqueous solutions. Skin-Cote No. 3, which is water repellent, is recommended for these. In this case the water forms droplets and runs off the skin.

Available from: Boyer-Campbell Co.

E-1020

"Dimco"

Features claimed: This rugged tool holder, the "Dimco", designed for accurate clamping on lathes, will fit any engine lathe for production rams. It permits operator an unusual amount of flexibility and ease along with complete accuracy in interchanging multiple tool setups. It consists of a main center section which is fixed in position on compound, and it may be rotated through 360 deg. for a setup of any series of operations. Once center section of tool post



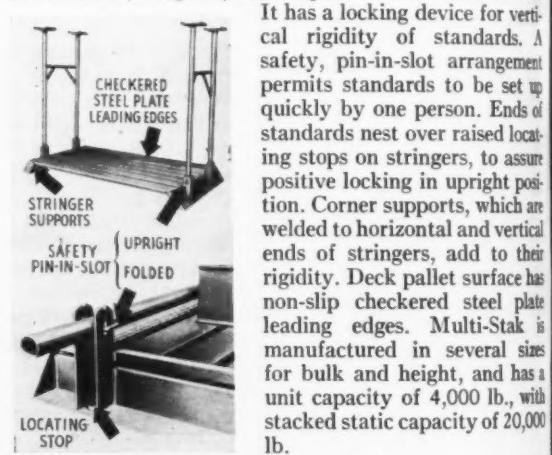
is placed for operation, there are three possible positions for any tool setup, since there are slides on two sides of main section, and a set of slides in front.

Available from: Kelvin Systems Corporation.

E-1021

Hand Me Ups

Features claimed: Multi-Stak is an all-steel pallet with self-contained, collapsible stacking attachment for tiering of crushable, irregular, odd-shaped or mixed merchandise.



Available from: Elizabeth Iron Works.

E-1022

Thermometer in Technicolor

Features claimed: Thermindex temperature-sensitive paints, available in 16 basic shades, undergo color changes at pre-determined temperatures. Many of these paints exhibit successive color transformations at several temperature levels. They are suitable for application to practically any type of surface by brush or spray. Most of the color changes which occur are irreversible, and when cool, provide a permanent record of temperatures attained over a definite period. These characteristics make thermindex paints very useful in investigation of heat-treating processes, safeguarding equipment against overheating, determining heat-transfer qualities of lubricants, in establishing

efficiency of air cooling arrangements, detection of faulty insulation of high pressure steam lines, and other situations where temperature is a critical factor.

Available from: Tempil Corporation.

E-1023

A Break for Those on the Bench

Features claimed: "Scotty" work bench is all steel construction with a "Nat-Flex" top, made of many layers of selected woods, pressure laminated and topped by thick tough surface-sealed plastic base composition. In addition to 10 sq. ft. bench top, bench has full steel storage shelf. All corners of legs and shelf are welded for added strength. Front of bench provides toe-space. It is finished in two coats of baked enamel, shipped complete with all necessary bolts, ready for assembly. Back of bench has rigid retaining lip to prevent tools and small parts from falling to floor.

Available from: Natkin & Co.

E-1024

Chain Reaction

Features claimed: Disassembling, repairing or connecting roller chains is simplified by use of this Baldwin-Rex chain vise. Vise is made of forged steel with hardened jaws

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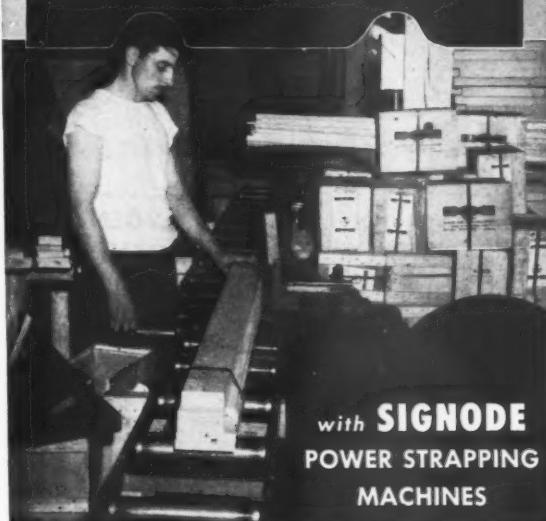
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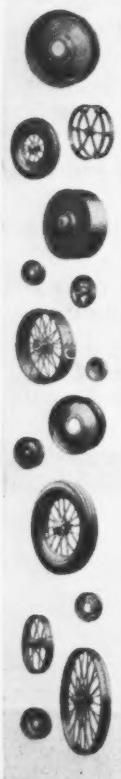


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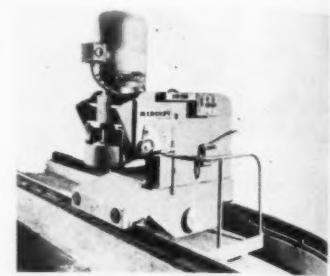
specially shaped for adapting to various chain sizes. Approximate adjustments are made before chain is inserted, permitting rapid clamping. Available in two sizes: No. 1 for single strand roller chains from $\frac{1}{2}$ -in. through 1-in. pitch, for double pitch chains of 1-in., $1\frac{1}{4}$ -in. and $1\frac{1}{2}$ -in. pitch, and double strand chains of $\frac{1}{2}$ -, $\frac{5}{8}$ - and $\frac{3}{4}$ -in. pitch. No. 2 for single strand chains of 1- through 2-in. pitch and for double strand chains from 1- to 2-in. pitch.

Available from: Chain Belt Co.

E-1025

Not the Same Old Grind

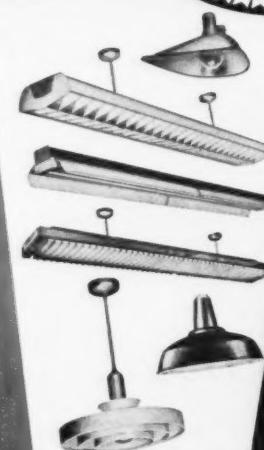
Features claimed: A new approach to problems of face grinding is represented by the Mercury series E-20 traveling head grinder, designed for grinding armor plate. It is especially suitable for grinding edges, angular surfaces, compounds and bevels. Conventional hard-to-maintain traverse bed has been eliminated, reducing initial and maintenance costs. Grinder runs on self-powered precision rollers along rails machined to precision tolerances and equipped with built-in leveling devices. Employing a 20-in. face-type grinding wheel, mounted on a head which tilts from horizontal to full vertical, it has complete mobility with traverse rate continually variable.



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This is the new low heat Ceiling Light designed to comply with recent Underwriters Laboratories requirements effective January 1, 1951. Made in three sizes:
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No. LH-1112 - 12" glass
Approved for 300 Watts
No. LH-1114 - 14" glass
Approved for 300 Watts

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Approved for 200 Watts
No. LH-1112 - 12" glass
Approved for 300 Watts
No. LH-1114 - 14" glass
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SMOOT-HOLMAN COMPANY Inglewood, Calif. Offices in Principal Western Cities • Branch and Warehouses in San Francisco

WESTERN INDUSTRY—October, 1951

Ap-
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No. 1
1-in.
2-in.
pitch.
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face
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It is

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it has
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A 20-hp. motor and heavy duty precision spindle assembly are mounted within rigid trunnions and arranged to feed in and out through 7 in. range, utilizing planetary gear driven motor reducer in combination with precision lead screw. Various increments of feed are accomplished electrically.

Available from: Mercury Engineering Corp.

E-1026

Step On It

Features claimed: Addition of pulverized natural rubber to Immediate-Set, and industrial floor material consisting of asphalt-rock and cold asphalt emulsion, greatly increases life span of floor, reduces brittleness in sub-freezing weather, provides greater traction when wet and lessens tendency to rut or wave even under extremely heavy point loads. Resistance to loads, impact and shock is three times as great as for same material without rubber. This material is suitable for large area floor resurfacing with a relatively thin ($\frac{1}{2}$ in.) layer and for patching small damaged areas.

Available from: Flash-Stone Co., Inc.

E-1027

Precision Thread Roller from Yodel Land

Features claimed: A machine identified as the Thommen type G-45, manufactured in Switzerland, for cold rolling chipless threads, is designed for handling 120 to 1,500 pieces per hour depending on kind of thread. It cold-rolls chipless thread of high precision with polished flanks and exact profiles in standard and special steels, most of the nonferrous metals, and such light metals as aluminum and its alloys. It rolls thread with left or right hand pitch, multiple pitch threads, threads within centers, very short threads with collars and also conical threads. Machine weighs 2,646 lb., requires a space of $51 \times 5 \times 41\frac{1}{2}$ in. Maximum pressure is 13,230 lb., and maximum metal hardness (tensile strength) is 170,000 psi.

Available from: Carl Hirschmann Co.

Magnetic Starter

E-1028

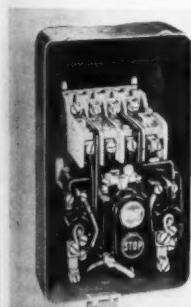
Features claimed: Rated at 10 hp., 220-550v., 3-phase, AC is a capacity size magnetic starter. This in-between size starter has a definite price advantage. It has renewable rectangular type contacts of specially developed silver for maximum arc-quenching properties and lowest contact resistance. Terminal boards are molded of arc-resistant alkyd and are equipped with pressure connections. Since it measures $6\frac{1}{4} \times 10\frac{3}{4} \times 4\frac{1}{4}$ in., compactness is another advantage.

Available from: Furnas Electric Company.

Just Alike

E-1029

Features claimed: This copying machine has triple advantages of low cost, advanced design and wide printing width. Model 20 Copyflex machine offers a 46-in. printing



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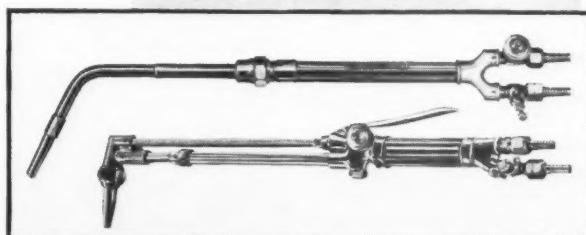


SAFETY REGULATORS for almost every gas and use—pressures up to 5,000 PSI.

WELDING TORCHES for light gauge to heavy castings. Interchangeable nozzles and extensions available for descaling, multi-flame heating and other special purposes.

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Babbitted Bearings are better 7 ways!

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4. LONG LIFE—Correctly lined up and properly lubricated, they last for years.

5. COMPLETE LINE—Pillow blocks with solid or split housings. Flanged blocks. Grease or oil lubricated and self-oiling types.

6. CAREFULLY PACKED—All are protected to reach you in factory-finish condition. Popular sizes are shipped in convenient cartons.

7. EASILY IDENTIFIED—Recessed decal give serial number and size.

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12,354-P

width with exposure speeds up to 95 in. per min. It requires no installation, but is simply connected to a 60-cycle, 115-volt, alternating current electric line. Fifty and 25 cycle machines are also available. Copies may be made on Copyflex sensitized paper, acetates, films and cloth. Copies are processed by the machine and stacked ready for use by merely feeding sensitized medium into machine with translucent original to be reproduced.

Available from: Charles Bruning Co., Inc.

E-1030

Solder Rod Gets Nod

Features claimed: A lead-free aluminum solder rod, melting at 400 deg. F., and flowing at 450 deg. F., is being used in a growing number of industries; it can be applied with ordinary soldering irons and its performance is fully equal to that of high melting point solders which must be applied by torch. It can be applied by any indirect heating method, however. It will withstand pressures of 1,000 psi, and will work on all types of aluminum except 24ST. Available in $\frac{1}{8}$ x 18 in., and $\frac{1}{4}$ x 14 in. sizes in 5-lb. packages.

Available from: All-State Welding Alloys Co., Inc.

E-1031

You've Got a Truck in Kalamazoo

Features claimed: Model 2500 Kalamazoo speed truck, powered with a Wisconsin 13 hp. engine, has automatic type, dry plate clutch, and three-speed transmission. Final drive acts on both rear wheels. This truck can now be furnished with a rugged, $\frac{1}{2}$ cu. yd. roura, self-dumping hopper. Hopper is discharged without the necessity of the operator leaving the driver's seat. Truck is highly maneuverable, has three speeds forward and one reverse, rigid



Semi-Live Skids with Fixed or Detachable Superstructures—especially designed for special needs.

GEO. M. PRESCOTT CO.
Engineers-Manufacturers of
Materials Handling Equipment
1567 East 25th St., Los Angeles 11, Calif.

WESTERN INDUSTRY—October, 1951

shoe-type internal expanding brakes, Timken-equipped steering fork, pneumatic or U. S. Innacush tires. Speeds up to 15 mph. Space beside driver's seat for long material.

Available from: Kalamazoo Mfg. Co.

E-1032

Healthy, Husky and Vise

Features claimed: This 4-in. jaw, fast-operating hydraulic machinists' vise, known as No. 1004, weighs 80 lb., has a maximum hydraulic pressure of 7,000 psi., and a maximum jaw pressure of 4,000 lb. A safety valve protects against overloading. Jaws can be closed without damaging the lightest castings or finished surfaces. Vise closing speed is $\frac{1}{8}$ in. per pump stroke, and full vise opening can be accomplished in 3 sec. Use of hydraulic vise permits operators to employ both hands to handle and position materials and in finishing work. Vise is controlled by two simple foot pedals, one for power, the other for release. Stop control is adjustable so that any production work is gripped and held with a single power stroke.

Available from: The Columbian Vise & Mfg. Co.

E-1033

Balanced Diet

Features claimed: A new conveyor feeder unit is designed for uniform feeding of parts for heat-treating, sandblasting, washing, cleaning and other processing operations in which mass feeding and handling is necessary. It is custom fabricated from mass-produced component parts to meet individual requirements relative to size and capacity. Because conveyor belt itself forms bottom of hopper, bridging is completely eliminated and a continuous uniform flow of parts is assured. Special design of flights guarantees against jamming of parts in turns of hinged steel belt.

Available from: May-Fran Engineering, Inc.

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ANTI-FRICTION COMPOUND
★ Solves Toughest Lubricating Problems
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Calif.

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Learn proper load techniques for lift trucks, how to handle irregular shapes. Note above key number on reader service card and get this and lots more valuable literature free from *Towmotor Corp.*

1037-L

Aircraft Primers and Subs

You ought to have this new bulletin on heat treatment of ferrous and non-ferrous power-plant, air frame and armament parts, offered by *Surface Combustion Corp.* Yours if you note above key number on reader service card.

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Save money on leather welder's gloves, aprons, jackets, sleeves. Order direct from the *Wicx-Merit* factory with their new catalog. Sent free if you mention 1038-L on reader service card.

1039-L
Good Stuff

Plenty of new ideas for saving worn, damaged pliers are crammed into a new handbook by *Utica Drop Forge & Tool Corp.* Get it by mentioning the above key number on reader service card.

1040-L
Got Heat Problems?

Knowing conductivity and heat loss properties of insulation block (Superex) might save some time and expense for you. Get the details by writing above key number on reader service card. Published by *Johns-Manville Corp.*

1041-L

Gambling on Plant Security?

"Plant Protection For National Defense" can help secure your plant against Communists and unwanted intruders. Sent free by *Deter Watchclock Corp.* if you mention 1041-L on the reader service card.

1042-L

"Quick Facts on Handling"

. . . with emphasis on engineering and operating features of overhead cranes is a new *Whiting Corp.* booklet. Yours for the asking. Mention above key number on reader service card.

1043-L

Flame Hardening

If you're working metal you'll want to read up on "Flame Hardening of Large Surfaces" put out by *Air Reduction Pacific Co.* Good stuff; more than worth writing 1043-L on reader service card to get.

1044-L

Decentralizing??

Might be surprised to see what Placer County, California, offers industry. Get a comprehensive 77-page report (*Industrial Survey Associates*) the easy way by writing above key number on reader service card.

1045-L

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1046-L

Have a Marking Problem?

Make permanent markings on stainless steel. Chances are you haven't heard of the new *Alcanate* process. You can if you mark the above number on reader service card.

1047-L

Facts for Electricians

Get the latest facts on new permanent and portable voltmeters and ammeters in a 28-page booklet offered by *The Bristol Co.* Yours free by noting the above key number on reader service card.

1048-L

Preventive Medicine

"The Care & Maintenance of Industrial Trucks" is title of a booklet published by *The Baker Industrial Truck Division of The Baker-Raulang Co.*, 1250 W. 80th St., Cleveland 2, Ohio. In the interest of more efficient and economical service from industrial trucks, this 16-page bulletin contains 51 illustrations of steps to be taken in preventive maintenance.

1049-L

Industrial Floor Manual

Flash-Stone Co., Inc., 30 E. Rittenhouse St., Philadelphia, in a new brochure, describes how floors can be engineered to withstand moving and deadweight loads, shock and vibration, extremes of temperature, oils, greases, chemical and industrial wastes and other destructive agents.

1050-L

Citation for Vibration

Balanced natural frequency conveyor vibration is subject of a new booklet issued by Stephens-Adamson Mfg. Co., Los Angeles, Calif. Installation photographs and diagrams point up advantages of this type of conveyor.

1051-L

Warm-hearted Bulletin

"Heating Process Tanks," a booklet, issued by *Heil Process Equipment Corp.*, 12901 Elmwood Ave., Cleveland, Ohio, is especially interesting because it includes a section on impervious graphite heating and cooling units which have unusual resistance to strong acids and possess outstanding heat transfer characteristics.

1052-L

Slow Down

Available from *Dodge Manufacturing Corporation*, Mishawaka, Indiana, are two brochures which simplify selection of speed reducers. Bulletin A-470 covers Dodge double reduction torque-arm reducers. A-602 gives data relating to single reduction units. These bulletins present data in a tabular form so that you can quickly select the right reducer for any installation if you know horsepower required and speed and size of shaft to be driven.

1053-L

This Is a Sharp One

A shear selector chart which greatly simplifies accurate selection of correct rotary shear knives for specific shearing applications is available from *Simonds Saw and Steel Co.*, 470 Main St., Fitchburg, Mass. It is designed to indicate at a glance the recommended knife for type and thickness of material being cut. Knife setting or mounting for shearing different thicknesses of metal is also given in tables with illustrations showing horizontal and vertical clearances.

1054-L

Screw Story

Condensed into 24 pages of No. 480 booklet by *Parker-Kalon Corporation*, 200 Varick St., New York 14, are essentials of P-K self-tapping screw selection, application information, recommended hole sizes and corresponding drill size numbers. All information in this pocket-sized reference book is up to date, and many of its tables conform to latest recommendations of American Standards Association.

1055-L

Chain Gang

A complete catalog is now available from *Morse Chain Company*, 7601 Central Ave., Detroit, on HY-VO power transmission drives. Discussed therein are: basic outline of operating principles behind chain drives; highlights of design principles incorporated in HY-VO drives; description of what drive will do in field of high-speed, heavy-duty power transmission; HY-VO capacities, speed ranges and service factors for selecting drives; and installation and lubrication procedures.

1056-L

It's a Steel

Of interest to users of the heat and corrosion resistant metals is *Allegheny Ludlum Steel Corp.*'s new data and handbook on stainless steels. In its 120 pages, this cloth-bound volume discusses approximately 40 different types of stainless steel and covers each type from standpoints of analyses, fabrication, heat treatment and special conditions of service. Copies may be obtained from company's offices at 2020 Oliver Bldg., Pittsburgh, Pa.

1057-L
"Electricity As Required"

Institutions, contractors, manufacturing industries, radio stations and municipalities will find of considerable interest, "Electricity As Required," a 16-page booklet by *Caterpillar Tractor Co.*, Peoria 8, Illinois. Its pages illustrate the wide use of Caterpillar diesel electric sets on various power applications, briefly outline specifications of various models and contain a chart for self-regulated and externally-regulated sets.

1058-L

Roto-Cone Booklet

Gerbing Manufacturing Corp., 11800 Milwaukee Ave., Northbrook, Ill., has for you a 30-page brochure on its Roto-Cone variable speed drives, belts and sheaves. Attention is called to 2 and 3 hp. 4:1 ratio variable pitch pulleys as well as the 10 and 15 hp. models.

1059-L

Let's Stick Together

A 36-page book on the nature, properties and uses of solder is obtainable from *Federated Metals Division, American Smelting and Refining Company*, 120 Broadway, New York. Separate sections are devoted to thermal effects, mechanical properties, principles of soldering, and fluxes. Selection of proper solder for a job is explained, and fusible alloys are described.

1060-L

Floor-O-Scope

"Over the Rough Spots" is a pocket-size, 32-page booklet published by *Stonhard Company*, 1306 Garden St., Philadelphia, which analyzes your flooring problems in

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STRAIGHT & SPIRAL BEVEL
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three minutes. It tells where to look for and how to correct bad floor conditions, how to protect both concrete and wood flooring, and how to maintain proper repair by comparatively unskilled workmen.

1061-L Lufkin Gear Catalog

A spiral-bound, 48-page catalog covering Herringbone speed reducers and high speed increasers may be obtained by writing *Lufkin Foundry & Machine Co.*, 5959 S. Alameda St., Los Angeles. Brochure also contains engineering data, formulas for calculating gear units and dimensional outlines.

1062-L Roller Bearing Catalog

You who engineer and specify industrial roller bearings and mounted units will be interested in obtaining a copy of Catalog No. 51, issued by *Shafer Bearing Corporation*, Downers Grove, Illinois. Book illustrates and describes full line of company's products, including pillow blocks, flange units, flange cartridge units, cartridge units, duplex units, take-up units and take-up and frame units plus unmounted roller bearings.

1063-L "Off the Cuff"

Spring 1951 edition of *Yale & Towne Mfg. Company's* materials handling publication, "Off the Cuff," may be requested from that company's Philadelphia Division, Roosevelt Blvd., Philadelphia 15. Featured in this issue are many "at work" photographs of Yale's equipment as well as descriptions of typical "how it was done" handling stories.

1064-L Cummins Brings Home a Load

"Diesel Power By Cummins Producing Coal" is title of a new folder offered by *Cummins Engine Company, Inc.*, Columbus, Indiana, which contains many action shots of Cummins equipment as used in coal production. Stripping and loading operations, as well as hauling and transporting operations are covered. A complete listing of models available is also given.

1065-L All About Hot Air

American Radiator & Standard Sanitary Corporation, Pittsburgh 30, authors a complete warm air heating catalog offering heating contractors full product information and detailed installation data. Folder features a technical data section which includes heat loss tables, equivalent length and sizing tables for duct work, and system design procedure.

1066-L Shopmen Get "The Bends"

An 11 x 17-in. chart suitable for shop posting entitled "Recommended Minimum Radii for Cold Bends" is offered by *Kaiser Aluminum & Chemical Sales, Inc.*, 1924 Broadway, Oakland, Calif. It is designed to give mechanics proper instructions for choosing minimum radii for proper bending of aluminum sheet in various gauges of the most commonly used alloys.

1067-L Jack on Tiptoe

Templeton, Kenly & Co., 1030 South Central Ave., Chicago, Ill., publishes a bulletin on its Simplex Rol-Toe 25-ton capacity jack. Highlighted in this folder is the jack's lifting toe capacity which is identical to lifting capacity on the cap.



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If it can ride on air, the best, most economical route for your materials — to box car, bin or production destination — is via light, durable and non-collapsible Spiratube. Its flexible, unobstructed passages convey maximum pay-load around corners, up and down, to hard-to-get-at places — and with minimum power-demand. Portable — it ideally fits into present systems. Sold through well-stocked distributors—Coast-to-Coast. Tried and approved by leading firms throughout the world.

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THE WEST ON ITS WAY

ALASKA

WHAT JUNEAU JOE? POWERFUL DOUGH!—Alaska Electric Light and Power Co. has invested more than \$250,000 in expansion of power facilities. New installations include a \$77,000 Pelton vertical water wheel, a \$26,500 generator, \$77,000 worth of new pipe and a \$5,000 machine bookkeeping system. Foundations will soon be laid for the installation of a \$180,000 Enterprise diesel generator in the power house.

CATCH AS KETCHIKAN—A certificate of necessity has been approved for Ketchikan Pulp and Paper Co. (a \$40,000,000 concern formed by a Bellingham, Wash., firm and a New York company), to construct a pulp mill in southeast Alaska. Company plans to produce bleached sulphate pulp which can be converted to rayon or to gunpowder. Mill will employ about 1,200 persons.

PLYWOOD PROMISED—Columbia Lumber Co. has been approved by the National Production Authority for building Columbia Plywood Corp. in Juneau. Mill will employ at least 120 men on a two-shift day. At least half that many will be needed in the woods. Annual production will be about 30,000,000 sq. ft. of finished plywood. Plant will be located at north end of Juneau Lumber Co. property on South Franklin Street.

ARIZONA

GRANDEUR FOR GRAND CENTRAL—Federal Reserve Bank has granted a loan of \$6,000,000 to expedite and expand operations of Grand Central Aircraft Co. Bulk of fund will be used for enlarging the Tucson plant at the municipal airport. Grand Central (parent company located in Glendale, Calif.) now has backlog of \$50,000,000 in orders for Air Force and commercial airline companies.

SKY HARBOR FOR AIRESEARCH—AiResearch Manufacturing Co. of Arizona has moved into its permanent \$2,500,000 plant at Sky Harbor Airport in Phoenix. Initial building is a modern, windowless, one-story structure with 70,000 sq. ft. of floor space. Complete air-conditioning allows work of extremely close tolerances. Full time operating force of 1,200 employees is planned. Building unit is designed for expansion in three directions.

CALIFORNIA

SHARING THE LOAD—By agreement with Douglas Aircraft Co., Inc., Interstate Engineering Corp. will produce fuselage sub-assemblies for use on Douglas AD-4 attack bombers. Contract, which totals over \$1,000,000, will cover a period of about 15 months. Interstate expects to hire 125 new employees for this work.

SWEET ROSIE O'REID—Rose Marie Reid of California (bathing suit manufacturer) has moved into a new 67,000 sq. ft. plant in Los Angeles. An outdoor heated swimming pool, to be used as a testing laboratory for buyers, and a patio are included. Other equipment includes 540 sewing machines. New plant which doubles firm's previous production facilities, is valued at \$800,000. Rose Marie expects to employ 700 at peak season as against 450 last season.

OVERHAULS FOR THE AIR FORCE—An Air Force contract amounting to \$3,500,000 for overhaul of an undisclosed number of large four-engine Air Force cargo-transport planes has been awarded to Pacific Airmotive Corp., Burbank. Contract is a partial allocation in connection with year's program running in excess of \$6,000,000, and is devoted exclusively to cycle overhaul of airframes. Work will be processed in PAC's Chino facilities.

RELAY RACE—Neomatic, Inc., Los Angeles manufacturer of electronics com-

ponents, is now located in larger quarters at 11632 San Vincente Blvd. New location makes possible doubled capacity for production of sub-miniature relays used on military aircraft, rockets, guided missiles, radar, radio and telemetering devices.

GOODIE, GOODIE—“Candyland,” new four-story plant of Sierra Candy Co., San Francisco, covers over 100,000 sq. ft. of floor space, and is rated largest

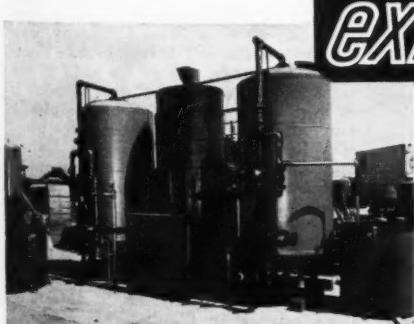


New building for Sierra Candy Company

candy factory west of the Mississippi. New factory has specially designed heating, ventilation and refrigeration systems for controlling uniformity of products. Building houses administrative offices, shipping and receiving departments, machine shop and boiler room, in addition to actual candy-making equipment.

TAR LIGHT, TAR BRIGHT—Koppers Co. plans to begin production in its first West Coast plant very soon. Factory, which is located on a 158-acre site south of Fontana, will produce tar products, such as coatings for oil, gas and roofing materials. Major expansion will follow later.

MORE POWER TO THEM—Federal Commission has authorized two California irrigation districts to build a \$7,805,000 power plant on the Stanislaus River. A 50-year license for Oakdale irrigation district and the South San Joaquin irrigation district of Manteca have been



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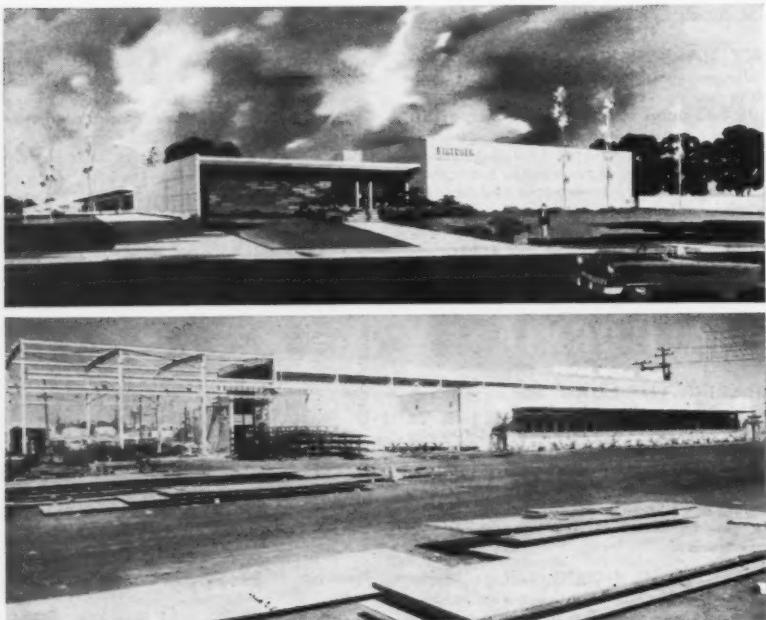
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And Still They Come...to Los Angeles Area to Build

TOP—Huge new building for Birtscher Corp. scheduled for completion in November.
BOTTOM—Hufford Machine Works' plant designed and arranged for peak efficiency.

(for more details, see items below)



granted for construction of the Tulloch project, 15 miles northeast of Oakdale in Calaveras and Tuolumne counties. Project will include a 170-ft. dam, a 68,000-acre foot reservoir and two generators with a capacity of 8,500 kw. each.

DOCTOR IN THE HOUSE—The William J. Moran Co. is builder of a new factory for Birtscher Corp., Los Angeles manufacturer of electro-surgical medical instruments. Structure will house 31,000 sq. ft. of factory space, and 6,500 sq. ft. of air conditioned, dust-free offices. Construction is of reinforced concrete and steel.

HUFFORD TRANSPLANTED—Located on a three-acre site one block west of Sepulveda Blvd., near Los Angeles International Airport is new million dollar plant of Hufford Machine Works, Inc., formerly headquartered at Redondo Beach. Plant encompasses over 60,000 sq. ft. of floor space, and is served by private railroad siding leading directly to factory.

NEW PLANT, NEW PRODUCT—Following purchase of a \$100,000 plant, Ferro-Plastics Co. of Oakland announces entry into the fiberglass field. Firm is a subsidiary of Ferro Enameling Co., Oakland manufacturer of porcelain enamel products. Location of company's new plant is next door to parent firm on 57th Ave. in Oakland. Items to be produced will include plastic sheets, and all types of formed fiberglass products, with specialization in industrial items.

BRIGHT VICTORY—Stecher-Traung Lithograph Corporation of San Francisco is to have the world's first five-color sheet-fed offset press. Built by Harris-Seybold Co. of Dayton and Cleveland, Ohio, the press is over 66 ft.

long and will require three freight cars for transportation to the West Coast. Presently the largest four-color offset press West of Chicago also is being installed for Stecher-Traung. Production capacity will increase 35% with these \$500,000 additions.

MECHANICAL MARVELS—Object of newly formed Sacramento firm, Henderize, Inc., 5667 Freeport Blvd., is the manufacture and distribution of patented products on a world-wide basis. Factories which manufacture the four products now in production are located in Stockton, Los Angeles, Emeryville, and Oakland. Products include "Fab-Spray," a patented mineral pigment spray for brightening and beautifying fabrics; "Mechanical-Cop," portable traffic signal; "Tissue-Pak," oil filter for gasoline engines; "Rap-A-Coin," small hand-operated machine for counting and wrapping pennies, nickels and dimes.

SHIP AHOY—Attack transports will be converted from mothball vessels by three West Coast shipbuilding firms: Bethlehem Pacific Coast Steel, San Francisco, will build two; Moore Dry Dock Company of Oakland has contracts for two; and Todd Shipyards of Seattle, Washington, is to build the same number.

10 MILLION TOYS—Occupation of new \$750,000 factory in Los Angeles International Airport industrial tract is completed by Mattel, Inc., manufacturer of toys. Music boxes are prime products of Mattel, whose plans embody production of 10,000,000 toys within the next year. Mattel also has military prime contracts for tank and automotive small parts manufacture.

PIPE MILL—A new electric weld pipe mill to be installed in Berkeley, Calif., plant of Consolidated Western Steel

Corporation, subsidiary of U. S. Steel Corp., will produce electric welded thin wall A.P.I. line pipe for use in oil and gas transmission and distribution lines. Existing facilities for production of light weight pipe for use in irrigation and water pipe lines will be retained.

AMMO CONTRACTS—Government contracts totaling \$15,000,000 are awarded Norris Thermador Corp. of Los Angeles for production of ammunition components: rocket containers, rocket heads, bomb fins, and cartridge cases. Main production will take place at Norris plant in Vernon; substantial contracts will be filled also at Thermador plant and new plant being established at Riverbank.

CHANNEL NO. 5—Department of Water and Power of the City of Los Angeles now has in service a Pulse Time Modulation system linking its main office in downtown Los Angeles with a steam generating station at Seal Beach, 22 miles distant. New Federal microwave system is equipped for operation on five voice channels and one telegraph channel, with provision for dispatching, telemetering and supervisory services and is designed for expansion to an eight-voice channel system; a total of 19 additional telegraph channels may be provided on any one of the voice channels. Entire system can be maintained by employees without special or expert knowledge of microwave equipment.

PLANT TWO—Helipot Corp., South Pasadena, adds second plant to its facilities, located at 350 West Colorado Blvd., in Pasadena. New holdings comprise 15,000 sq. ft. floor area, room for 150 employees on final assembly. Building will house assembly lines, production offices and canteen. Standard potentiometer production will continue as will production of special items for civilian and government orders.

CREST COMPACTS OPERATIONS—Before next June, new \$250,000 building for Crest Laboratories, Inc., of Burbank will be in use, consolidating operations presently carried on in eight locations. Drug company's production capacity will increase 50%; employment will nearly double.

NEW QUARTERS—Ground breaking is scheduled in Pasadena for a 22,000-ft. concrete tilt-up office and manufacturing building to be occupied by Wiancko Engineering Co., producers of electronics equipment. Estimated cost of plant is \$176,000.

DIVIDED WE STAND—Tramway Division is newly established component part of Columbia Steel Company, now located on Battery Street in San Francisco. The only one of its kind in the U. S. Steel Corporation, this division is in a position to bid all jobs completely erected as a prime contractor for projects located anywhere in the United States. Tramway Division is prepared to design complete tramways, and furnish all necessary track cable, wire rope fittings, mechanical and electrical equipment. They will also contract for foundations, steel work, all erection work.

RHEEM GETS RANGES—Controlling stock interest in James Graham Manufacturing Co. of Newark, Calif., manufacturer of Wedgewood line of gas ranges, is purchased by Rheem Manufacturing Co. Acquisition will comple-

Rheem's line of gas-fueled household appliances. Manufacture and distribution of Wedgewood products will be continued under Clarence Graham, son of the founder, at the plant's present location.

PLANE TALK—Program for expansion of United Air Lines maintenance base at South San Francisco will involve construction of large hangar, increasing by 10% the present hangar area; a new warehouse for storage of supplies and parts, doubling present area; an additional shop building for engine overhaul, a space increase of more than 30%. Forty thousand sq. ft. of concrete parking area and three out-door engine run-up pads also will be constructed. New facilities, to be under construction in early fall, primarily are designed to handle 40 new Convair planes which will be delivered to United by the end of 1952. Current building program anticipates maintenance needs through 1955; 200 new aviation jobs will be created as a result.

FURNITURE MOVING—Lightfoot Studio, 20-year-old Pasadena firm specializing in traditional wrought iron and modern metal-framed furniture, sells its traditional furniture division to newly-formed firm, California Wrought Iron, Inc. Complete traditional furniture inventory and all machinery located at Lightfoot's two plants in Pasadena and Alhambra are included in the sale. Lease of 14,000 sq. ft. of building and property space is signed by new company. Lightfoot Studio retains the firm name, right to continue manufacture of modern furniture line, 5,000 sq. ft. of manufacturing space, showroom space at Pasadena plant, and joint tenancy with California Wrought Iron, Inc. in the firm's showroom at Los Angeles Furniture Mart. Both firms will retain offices at 450 South Raymond, Pasadena.

MCCULLOCH TAKES THE HIGH ROAD—Adding again to greatly expanding facilities, McCulloch Motors Corporation purchases all outstanding stock of Rhodes Lewis Company, Culver City firm of engineers and manufacturers of aircraft components. Three plants of Rhodes Lewis are actively managed by McCulloch executive staff who will continue fulfillment of existing contracts, amounting to more than \$6,000,000 between Rhodes Lewis and the Army, Navy, and major airframe manufacturers. McCulloch completes this third major acquisition coincidentally to tripling in size their main Los Angeles plant.

RATION CANS—Oakland, Calif., plant of American Can Company is manufacturing 30,000,000 cans for G.I. combat rations of the type now used in Korea. Production represents the Oakland plant's share of a \$1,910,000 Quartermaster Corps order awarded to Canco for 76,554,000 ration cans. Balance of the order is being filled at eastern Canco plants. The cans are shipped to Stockton and Fresno, where they are packed with an improved type of ration which offers a tastier and more varied diet than the World War II combat meals.

NO SOAP—Plans for a \$1,500,000 expansion of facilities for production of synthetic detergent materials are made by Standard Oil Company of California. Additional facilities will be built at SOC's Richmond refinery for its chemical subsidiary, Oronite Chemical Com-



Designed to handle loads of 500, 1000, or 2000 lbs., the Shepard Niles Lift-About Jr. electric hoist actually exceeds, in performance, that which customarily is expected from these lighter service hoists. And requires less maintenance in doing so.

Two factors are responsible for such outstanding performance: one is a sound engineering background that comes from years of specialized experience. This is apparent in the design and construction of the hoist itself. The other is the Shepard Niles policy of making certain that the hoist you buy is the *right* hoist for *your* service. It is a policy that protects against buying a hoist that is too light for severe service. By the same token, it prevents investing more than necessary when lighter service is indicated.

If you would like help with your handling problems, write us. A Shepard Niles specialist will be glad to place our years' of material handling experience at your service.

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6238 Maywood Avenue, Bell, Los Angeles, California—Mr. Chester M. Mason

SAN FRANCISCO: STRYCO MANUFACTURING COMPANY
470 Natoma Street, San Francisco 3, California—Mr. R. C. Arquette

SEATTLE: PRESTON FALLER COMPANY
1921 Minor Avenue, Seattle 1, Washington—Mr. Preston Faller

The Lufkin Line

By VIC FAWCETT



"OIL PATCH"

Ever take a trip through an "oil patch"? When you do, look for a majority of Lufkin Geared units. And as you watch the grasshopper-type pumping machines bending to their efforts, think! Think of the job being done. Quietly, before your very eyes this equipment may be raising over a mile of steel rods—yes, even two miles—and hundreds of barrels of fluid to the surface.

In an average well there is a dead load of 5 to 10 tons suspended from the horsehead. Heavier wells—deeper holes—rod strings will weigh 10 to 20 tons. This load is raised and lowered 10 or 15 or 20 times per minute. The heart of an oilfield pumping unit is the gear reducer, and pumping service is generally considered to be one of the toughest problems.

Gear Torque on the peaks has been measured to a million inch pounds. Shock loading, load reversals, fluctuating conditions—continuous operation—that's the kind of work Lufkin Gears are famed for the world over!

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Santa Fe Tank & Tower Company
Standard Oil Co.
Fluor Corp.
Terry Steam Turbine Co.
Ethyl Corp.
General Petroleum Corp.
The Texas Co.
Shell Oil Co.
Humble Oil & Refining Co.
Mathieson Chemical Co.
Santa Fe Railway
Union Pacific System
Southern Pacific Co.
Continental Oil Co.
Southland Paper Mills

Lufkin pioneered the geared oilfield pumping unit—leads all other manufacturers in this field, nationally and internationally.

That's all for now—see you next month, same magazine, same space.

pany. Detergent alkane is used largely in the manufacture of synthetic detergents for the household market.

DYE-ALATING — Allied Chemical & Dye Co. has purchased from San Francisco-Fresno Land Co., 125.7 acres of waterfront industrial land at Nichols between Navy holdings on the west and property of Allied's subsidiary, General Chemical Co., on the east, at a reported price of \$18,000.

CHERRY RIPENS IN SANTA ANA—The Cherry Rivet Division of Townsend Co., manufacturer of rivets, bolts and metal fasteners, has begun construction of a 84,000-sq. ft. plant of concrete and brick, located on a 16-acre site in Santa Ana. A payroll of \$2,000,000 for 500 persons will be established within six months.

CAN'T FLY ON ONE WING—Lockheed Aircraft Corp. plans to establish a sub-assembly plant at Bakersfield with a payroll of \$100,000 a month. Company has leased a large warehouse building at 14th and S Streets for this purpose. Lockheed has more than \$850,000 backlog orders in government contracts for production of 12 different types of aircraft, including four basic models. Lockheed has additional plans for building a \$12,615,000 aircraft assembly plant for the Air Force at Palmdale airport. It will be used for final assembly and test flying of Lockheed jet planes.

ANIMAL CRACKERS—In order to expand production of its Full-O-Pep live-stock and poultry feed business, Quaker Oats Co. has purchased land south of Stockton. Plot is eight acres in size and is bounded on two sides by Southern Pacific and Western Pacific railroad tracks.

RANCH STYLE—Kilgore-Goldsberry Manufacturing Co., Pomona, has been acquired by Farmhand Co., farm implement division of Superior Separator Co., Hopkins, Minn. This 16,000 sq. ft. plant, which has about 30 employees, is to produce new farm materials handling machines. These are described as Western type machines for Western agriculture. Plant is now engaged in manufacturing bulk grain haulers and mixer-feeder attachments for wagons.

WILCO BARRELS ALONG—Pan Pacific Oil Co., Long Beach, has been acquired by Wilco Co., Los Angeles. It will be operated as a wholly owned subsidiary with barrelling facilities for approximately 2,000 barrels a day, together with large five-gallon automatic canning facilities. Thus, Wilco will expand its packaging business to include large volume barrelling operations.

STEAMED UP—Contra Costa Steam Plant, at March's Landing, 2½ miles east of Antioch on the San Joaquin River, recently became a part of Pacific Gas and Electric Co.'s power system. Three 100,000-kw. generating units are in service today and the investment to date is \$50,000,000. Two additional units will be installed by early 1953, boosting plant's capacity to 500,000 kw. and construction cost to \$80,000,000.

END OF THE TRAIL—A new terminal for Pacific Intermountain Express Co. of Oakland was opened recently in Stockton. New terminal has 14 loading doors

equipped with overhead closures. Terminal yard is completely paved and enclosed by cyclone fence. Terminal area comprises approximately 50,000 sq. ft. Reinforced concrete dock has 3,200 sq. ft. of working area. Office section of terminal has 800 sq. ft. of floor space and is air conditioned. Entire structure is equipped with automatic sprinkler system.

SPREAD ALL OVER—American Bitumuls & Asphalt Co., formerly American Bitumuls Co., was formed for nationwide manufacture and sale of paving asphalt and special asphalt products. American Bitumuls & Asphalt, which formerly operated only east of the Rocky Mountains has acquired assets of Standard Asphalt & Bitumuls Co., which operated in the West. (Both companies are Standard Oil of Calif. subsidiaries.) New organization will have 14 district offices, as well as manufacturing plants and asphalt refineries in United States and Puerto Rico.

FLYING POTTERY—Ryan Aeronautical Co., San Diego, is engaged in turning out large scale production contracts for adaptation of ceramic coating to aircraft parts. This coating, which is only one to three-thousandths of an inch thick, is applied to "hot spots" of engines. It conserves vital materials and does not add noticeably to weight of product. Convair, Boeing, Douglas, United, Pan American are among many companies planning to use this type of aircraft part. It will also be applied to the General Patton tank, being built by Continental Motors.

HELPING HARVEY—Harvey Machine Co., Torrance, has been approved for a Defense Production Administration loan of \$46,000,000 to finance construction of two new aluminum plants in the Northwest. Loan will be made by Reconstruction Finance Corp., as a government fiscal agent.

IDAHO

SANDPOINT HANGS OUT SHINGLE

Operations have commenced in a new shingle mill, by Cedar Products, Inc., at Sandpoint. Enough cedar logs are on hand to keep a 12-man shift busy for at least eight months. This mill replaces one which burned to the ground last June.

RECOVERY PROGRAM—AEC signs contract with American Cyanamid Co., New York, for operation of the chemical processing plant at National Reactor Testing Station, Idaho Falls. The plant will recover nuclear fuel from used reactor fuel elements. It is being constructed by Bechtel Corporation of San Francisco. Plant design and recovery process are developments of Oak Ridge National Laboratory, Oak Ridge, Tenn.

MONTANA

NO EASYWOOD—A plant to produce hardboard at the rate of 50,000 sq. ft. a day may be built in Missoula by Montana Hardboard Co. Firm has obtained a plant southwest of the city and contracts have been entered into with lum-

ber mills to secure a raw material supply. Company is incorporated for \$915,000, and estimates for construction of this plant run around \$500,000.

NEVADA

ANOTHER FIRM GOES BASIC—Western Electrochemical Co., San Francisco, is building \$5,000,000 worth of new plant facilities at its plant site at Government developed Basic Magnesium site in Henderson. Also under construction are a \$1,000,000 plant for Army Signal Corps, and a \$2½ million plant for Bureau of Aeronautics. Details of projects are withheld for security reasons.

HURRAY FOR HIKO—A \$600,000 tungsten concentrating plant, designed for treatment of 250 tons daily, will be built west of Hiko by Lincoln Mines Division of Black Rock Mining Corp. At the present time nearly 60 tons of ore are being trucked to Bishop from Hiko for processing. Mining men in that area are seeking state and federal aid for construction of a highway for servicing this plant.

IN RENO IT'S DEFENSE—A \$2,500,000 subcontract was awarded to Nevada Air Products Co., Reno, by Douglas Aircraft Co., Santa Monica, for assembly of three parts for Navy's Skyraider plane. Plant will occupy site of former Mobilhome firm in the general area of Vaughn Mill Co. Negotiations have been concluded with Sierra Machinery Co. of Reno for more than \$200,000 worth of tools and jigs for this plant, which is expected to employ about 200 persons.

OREGON

SHELLING IT OUT—Shell Oil Company's multi-million dollar expansion program at its Willbridge Terminal on the Willamette River in northwest Portland has been completed. It serves as a distribution center for Oregon, Washington and Idaho. Products processed at Willbridge include lubricating oils and 21 paving grades of asphalt and road oils. Terminal, Shell's second largest in the country, employs 175 men.

OUT OF THE FOREST—Chapman Manufacturing Co.'s hardboard plant at Corvallis has been sold to a group of Anacortes, Washington, lumbermen. Sale of company involved over a million dollars and includes manufacturing plant, property, water rights, mill race and dam on Mary's River, as well as hydroelectric plant. New operators will retain Chapco trade name and Chapman Manufacturing Co. as a firm name.

ONE PLANT FROM MILWAUKIE—California Spray Chemical Co. has purchased a site in the Kellogg Park district of Milwaukie, and will build a new factory and warehouse structure there, containing 20,000 sq. ft. of floor space. Employment of 15 persons is anticipated. Purchase price was \$15,000.

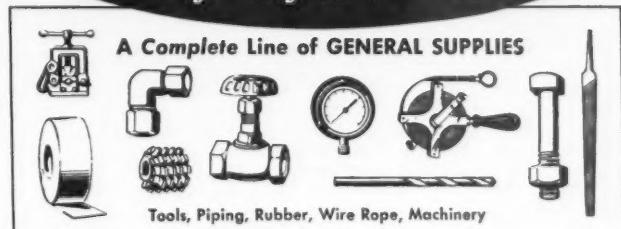
ALL THE BEANS IN ONE CAN—Three Oregon counties joined in incorporating the Associated Blue Lake Green Bean



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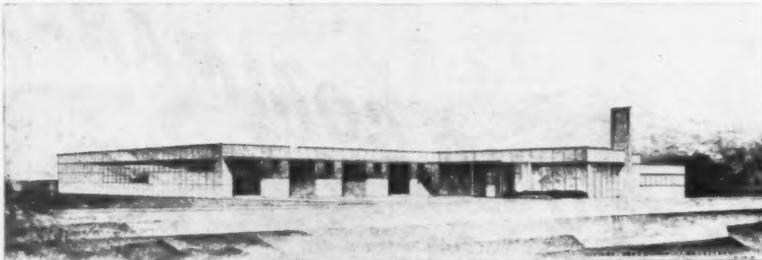
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LONG BEACH • STOCKTON • SAN JOSE • VENTURA • SACRAMENTO • AVENAL • FRESNO
SANTA MARIA • CUYAMA • NEWHALL • TAFT

Construction to Begin Immediately on R. M. Wade Building



BIG GRAY HOME IN THE WEST—A reinforced concrete building will be built on $1\frac{1}{3}$ acres of land in northwest Portland by R. M. Wade & Co. Office and display units will be a story and a

half, with measurements of 80 x 58 ft. Service parts and shipping departments are grouped in warehouse floor space, with dimensions of 190 x 138 ft. Total cost will be approximately \$250,000.

Canners, Inc., with headquarters in Portland. Purpose of this non-profit corporation is promotion of bean sales. Companies organizing agency are United Growers, Inc., Stayton Canning Co., and Paulus Brothers Packing Co.

TRACKED DOWN—Hinkle is site of Union Pacific's new glass brick engineer-house. It is designed primarily for diesel servicing and has special air cleaning features to keep it from getting smoked up inside. Savings in light bills are calculated to more than compensate for cost of glass construction. Hinkle terminal is a \$5,000,000 project made necessary by construction of McNary Dam,

which will flood old lines. Terminal has 41 tracks and holds 355 cars.

A FULL PIPE—A \$200,000 expansion of American Pipe and Construction Co.'s Portland plant will provide additional facilities for defense work. Around 50,000 sq. ft. will be added to the steel fabrication shop building and additional office and locker room space will be included.

TRUCK TALES—Freightliner Corp. will build a \$200,000 factory building at 3601 N. River St., Portland, for manufacture of trucks and trailers. Factory will measure 130 x 320 ft. with a 30 x 100-ft. wing for offices and em-

ployee facilities. Main factory will have 16-ft. clearance and central trusses will measure 70 ft. Concrete walls will be poured flat, then tilted into place.

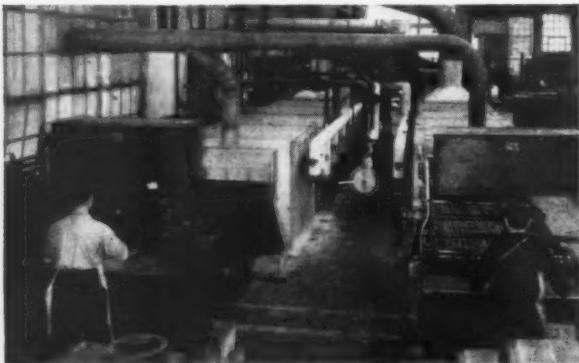
GETTING CANNED—Expansion of Bagley Canning Co.'s Ashland plant has been completed. Among new features are two large pre-cooling and storage rooms. Cannery employs 200 men and women at peak season.

UTAH

CLOUD #7—Eaton Metal Products Co. of Nebraska is negotiating to establish a plant in Salt Lake City to fulfill a \$1,500,000 U. S. Navy contract. Plant, which will require approximately 20,000 sq. ft. of space, will be used to build "spherical floats" for the Navy, but will continue to operate after the Navy contract has been completed.

EAGER EIMCO—Eimco Corp., commences production of filters at its new \$500,000 plant at 6th West and Second South Sts., Salt Lake City. Filters range in price from \$3,000 to \$50,000, and are used by sugar companies, mining companies, sewage disposal plants and manufacturers of antibiotics. New plant, with 83,000 sq. ft. of floor space, will employ around 100 men.

FLOTATION OPERATION NOTATION—Filtrol Corp. will install a \$50,000 flotation unit at its plant in Salt Lake City for extraction of pyrites (iron disulfides) from clays processed by the firm. This will greatly increase usable re-



PRODUCTION INSURANCE AGAINST GAS CURTAILMENT

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FOR SURE — Western Gypsum Co., Western affiliate of Certain-teed Products Corp., Ardmore, Pa., is manufacturing gypsum wallboard with a built-in fire barrier at its Sigurd, Sevier County plant. Production from this plant has made it possible to place this fire barrier on the national market.

WASHINGTON

FRUIT TOO WELL DONE — W. E. Roche Fruit Co., Yakima, sustained a \$100,000 loss in a recent fire. Firm will set up business in a nearby building to handle this year's fruit crops. Hard-to-get packing equipment was destroyed in this fire.

TRUE STORY — Plans are underway in Spokane for construction of a new distributing and warehouse building for True's Oil Co. It will be 80 ft. wide and 255 ft. long. True's old one-story building has been sold for approximately \$200,000 to an undisclosed purchaser, and will be leased to Phillips Petroleum Co. of Hillyard.

A SWEET DEAL — Construction has begun on Monsanto Chemical Co.'s vanillin plant in Seattle. Contract bid for building construction and plant site preparation was awarded to E. F. Shuck Construction Co., Inc., Seattle, for the sum of \$84,999.

EVERETT TREE PARTY — Weyerhaeuser Timber Co. has begun construction of a \$20,000,000 pulp mill in Everett. It will utilize Douglas fir sawmill waste which cannot be used in sulphite process at Weyerhaeuser's present Everett pulp mill. It will also be equipped to make purified pulp explosives. New plant will be built adjacent to Mill C in Everett.

PULP APLENTY — The Spokesman-Review, Spokane, is constructing a 135 x 168-ft. reinforced concrete warehouse for paper storage at Millwood. The \$125,000 structure will be an addition to a paper warehouse adjacent to Inland Empire Paper Co. Brick building will be furnished with newest type hoisting and stacking equipment.

IN JIG TIME — Boeing Airplane Co. plans immediate construction of a jig erection building at its Plant No. 2 in Seattle. New \$800,000 facility will be approximately 220 x 300-ft. with two roof levels. South portion will have approximately an 18-ft. ceiling, with a concrete slab roof that will form the floor of a future second story. North portion will have a 40-ft. ceiling and will contain two 15-ton overhead cranes. Expansion program is necessary for accelerated work on new Boeing B-52A multi-jet heavy bomber.

FIVE YEAR PLAN — A five-year extension of General Electric Co.'s contract with the Atomic Energy Commission for operation of Hanford Works has been approved by AEC officials. GE has operated the Hanford plutonium plant for the government since 1946. Company will continue to manage the government-owned town of Richland, and will also continue to furnish such related services as architect-engineer management, pre-

liminary studies and surveys, procurement, design and construction.

WYOMING

BENTONITE BELONGS — The Magna Cove Barium Corp., Houston, Tex., has brought a new industry to Wyoming by establishing a bentonite processing plant on the outskirts of Greybull. Wyoming's congressional delegation has been asked to help the firm obtain a certificate of necessity from the government for its materials.

IN GOOD SPIRITS — National Distillers Corp., has contracted to purchase 20% interest in Intermountain Chemical Co., a Wyoming concern. Present plans call for Intermountain to enlarge a "Trona" mine, and to build a plant to make 300,000 tons of pure soda ash annually. Trona is a natural soda ash and is essential in the making of glass.

PILOT PLANT PROMOTION — A \$350,000 Bureau of Mines appropriation for completion of an alumina pilot plant at Laramie is expected shortly.

SOURCE FOR SULPHUR — U. S. Bureau of Mines has reported that recovery of sulphur from gas by-products of Wyoming's petroleum industry promises to ease nation's critical sulphur shortage and draw new industry to the state. Bureau has estimated that 6,500,000 long tons of sulphur can be recovered. Two plants to recover the scarce material from hydrogen sulphide petroleum gases are now in operation.

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Western Gear Works



W. C. Rueckel
Henry J. Kaiser Co.



H. K. Pohlman
National Motor Bearing Co.



M. C. Bulkeley
National Motor Bearing Co.

California

ROBERT L. EVERETT, Los Altos, becomes supervisor of industrial relations at Sunnyvale plant of *Westinghouse Electric Corp.*

J. C. PRIOR becomes vice president in charge of production and engineering for *Sierra Electric and Manufacturing Co.*, Los Angeles.

Rhodes-Lewis Co., subsidiary of *McCulloch Motors*, appoints **CHESTER M. WEAVER** plant manager at Culver City. Weaver has been associated with *Boeing Aircraft*, *United Air Lines* and *Pacific Intermountain Express*, in the past.

H. E. SCHRADER, in charge of design and application at *Western Gear Works*' Lynwood plant, appointed to executive staff to assist in product development and research for Lynwood, Belmont, San Francisco, Seattle, Washington, and Houston, Texas plants.

Henry J. Kaiser Co., Oakland, appoints **W. C. RUECKEL**, former vice president of *Koppers Co.*, manager of chemical division.

H. KINGSLEY POHLMAN and **MILTON C. BULKELEY** elected vice president in charge of manufacturing and vice president and treasurer, respectively, for *National Motor Bearing Co.*, Redwood City.

KENNETH P. BOWEN, vice president in charge of manufacturing at *Northrop Aircraft, Inc.*, Hawthorne, is elected chairman of manufacturing methods committee for Western region of *Aircraft Industries Association*.

Southern California Edison Co. names as vice president, **W. C. McWHINNEY**. He was assistant vice president, public relations, before this advance.

Meyenberg Milk Products Co., San Francisco, names **R. W. DOAK**, manager of Ripon, Calif., plant, as production manager for all company operations including plants at Remington, Ind., Paso Robles and Compton, Calif., and Watseka, Ill.

EARL B. BIRMINGHAM becomes president of *Hammond Lumber Co.*, San Francisco. He is former resident manager of company's Samoa, Calif., plant and vice president at San Francisco headquarters.

B. R. FONDREN elected assistant secretary of *Menasco Manufacturing Co.*, Burbank, replacing **WILLIAM B. YEAGER**, resigned. Fondren will continue in his duties as assistant treasurer and director of finance division.

Douglas Aircraft Co., Inc., appoints **G. H. ABEEL**, former coordinator of military relations, and **HARRY HJORTH**, formerly of Douglas' Santa Monica engineering department.

ment, as assistants to vice president, military sales. **N. A. BAIRD**, Santa Monica division executive engineer, assumes duties as assistant to vice president, engineering, succeeding **JOHN C. BUCKWALTER**, recently advanced to chief engineer, Long Beach division.

New purchasing agent for *Solar Aircraft Co.*'s San Diego plant is **RAYMOND BRACK**, who was assistant general purchasing agent at *Carnation Co.*, Los Angeles. **CLYDE W. HULL** is named assistant manager of manufacturing at Solar's San Diego plant.

F. LEE WOODARD elected president *Cost Store Fixture and Mfg. Co.*, succeeding **MICHELE RENNA**.



Kitchel

BROOKS KITCHEL, former superintendent of stores, is upped to purchasing agent, *Fontana Works* of *Kaiser Steel Corp.*, following resignation of **R. N. STURTRIDGE**. Replacing Kitchel is **E. W. HOLBROOK**, assistant superintendent of stores. **CURTIS BONNEVILLE** is named general foreman of Kaiser's merchant-skep mill, and **JAMES W. KENT**, supervisor of material control at the *Fontana Works*, is promoted to scrap procurement buyer in Los Angeles district sales office.

WILSON J. FIELD, former manager of *Fleishhacker Paper Box Co.*, San Francisco, is named general manager of *Raisin-Thibaut, Inc.*

BEN B. LAWSHIE is detached as manager of U. S. Chamber of Commerce's commercial organization department to take post of organization consultant for Western States for the U. S. Chamber.

WILLIAM L. BARNES leaves post as chief industrial engineer for *Cutter Laboratories*, Berkeley, to join staff of *California Automatic Sprinkler Company*, San Francisco.

Western Die Casting Co., Oakland, selects **E. G. HULING** as plant superintendent to succeed **E. J. BASCH**, resigned.

CHARLES B. BUCKLEY is elected vice president in charge of sales, *Weber Aircraft Co.*, Los Angeles. Buckley was formerly general

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manager of aircraft division of *Weber Showcase & Fixture Co., Inc.* ARNOLD JOHNSON, former works manager for Weber Showcase & Fixture Co., Inc., takes over as vice president in charge of manufacturing for Weber Aircraft.

Southern Pacific Railroad promotes R. L. SMITH of its Los Angeles operating department to master mechanic, succeeding N. L. McCACKEN, who is promoted to assistant general superintendent, motive power, *Pacific Electric Railway*. J. W. RONAN succeeds Smith as assistant master mechanic, Los Angeles division.

HAROLD F. CARR, former executive secretary of *Pacific Employes Association*, named manager of personnel department, *Pacific Gas & Electric Co.*, succeeding L. J. NEVRAUMONT, deceased.

RUDOLPH ILLING appointed assistant traffic manager of *Columbia Steel Co.*, San Francisco, succeeding F. E. MCCLURE, retired.



Avila

Bardwell & McAlister, Inc., Hollywood, elects WILLIAM AVILA vice president and plant manager. Avila was in charge of production for this firm prior to being advanced.

PHILIP E. GILBERT named technical director and chief chemist of *Tea Garden Products Co.*, San Francisco.

RANDALL MAASS, assistant manager of *General Petroleum's* Torrance refinery, resigns to become assistant manager of *Standard-Vacuum Petroleum Maatschappij's* refinery at Palembang, Sumatra, in the Republic of Indonesia.

ELLISON L. HAZARD, former plant manager of *Continental Can Company's* Los Angeles plant, promoted to manager of manufacturing for Pacific (Metal) Division succeeding HARRY G. BRATT, who becomes general manager of manufacturing.

Idaho

Pioneer Lumber Co., Shelby, formerly *O'Neil-Anderson Lumber Co.*, appoints MERL SORICK, Boise, manager. Sorick formerly worked for *Idaho Highway Department*.

Independence Lead Mines, Inc., Wallace, appoints WILLIAM E. CULLEN director and president.

Montana

HAROLD VOGT, Chicago, former mine superintendent, becomes works manager of *U. S. Gypsum Co.* plant at Heath. Vogt succeeds V. E. COFFMAN, who takes over as works manager of Genoa Lime plant.

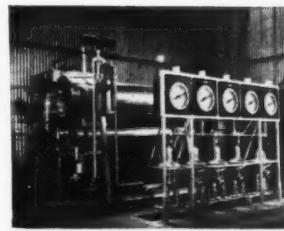
Nevada

Titanium Metals Corp. of America appoints ROLLIN P. SMITH project manager of its Henderson plant.

New Mexico

CARL A. AREND succeeds NELSON C. WHITE as assistant manager of Potash Division,

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Stroke - - - - -	inches 3 1/4	3 1/4	4
Displ. cubic inches - - - - -	91.9	107.7	154
H.P. and R.P.M. range - - - - -	15 at 1600	17.5 at 1600	26.8 at 1600
	21.5 at 2400	25 at 2400	31 at 2400
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MILWAUKEE 46 WISCONSIN

International Minerals & Chemical Corp. at Carlsbad. White transfers to Chicago.

ELMO R. MORGAN, Los Alamos field manager for *Atomic Energy Commission*, accepts appointment as Coordinator of Cooperative Research at *University of Utah*.

Oregon

MICHAEL A. GUDMAN appointed controller of *Industrial Air Products Co.*, Portland. Gudman was formerly controller and treasurer of *White Stag Manufacturing Co.*, and has been associated with *Columbia River Packers* in a similar position.

Harbor Plywood Corp. appoints Ross J. Bowles as manager of timber division at Riddle.

Northwest Foundry & Furnace Co., 2345 S.E. Gladstone, Portland, appoints HERMAN C. ANDERS engineering supervisor. Anders, former supervisor at *Schlage Lock Corp.* of San Francisco, Calif., has been with Northwest for three years as factory representative.



Anders

HENRY J. LEAF elected president of *Inman-Poulsen Lumber Co.*, Portland, succeeding HENRY B. VAN DUZER, deceased. PAUL C. KING named vice president.

R. BURKE MORDEN elected president of *Morden Machines Co.*, Portland, succeeding his brother, DEAN JOHNSON, deceased.

ROBERT E. FLOWERREE named vice president and mill manager succeeding R. P. RICHARDSON, also deceased. L. H. McREYNOLDS elected vice president and DEAN JOHNSON, Jr., secretary-treasurer.

Utah

Kennecott Copper Corp. appoints STANLEY HUGHES assistant to general manager, Western mining district, with duties in smelting and refining divisions.

EBENEZER BROWN retires as plant superintendent for *Continental Oil Co.*, Salt Lake City.

FRANK E. SCHEFFNER, executive vice president, named president and general manager of *The Lang Co.*, Salt Lake City. Scheffner succeeds JOHN LANG, founder of the firm, who was elected chairman of the board of directors.

B. H. DECKER, superintendent at Salt Lake City for *Denver and Rio Grande Western Railroad*, named assistant to vice president. GALE B. AYDELOTT, former superintendent at Denver, succeeds Decker. LYNN B. COLEMAN, superintendent, Alamosa division, replaces Aydelott, and ROBERT B. EAGLESTON, assistant superintendent at Denver, replaces Coleman. Other personnel changes include: WILLIAM C. HORNER, who transfers from Pueblo to become assistant superintendent at Denver; EDMUND R. MORAN, trainmaster at Helper, who becomes assistant superintendent at Grand Junction, Colorado.

Washington

Following are personnel changes at *Boeing Airplane Co.*: AL SODERQUIST, staff engineer for processes and standards, becomes

administrative engineer; GEORGE SCHAIER, staff engineer, aerodynamics and power plant, is made chief of technical staff; new project engineer, aircraft is GEORGE MARTIN, former chief project engineer for B-47 Stratojet; MARTIN SCHUEHLE is promoted to staff engineer, aerodynamics; W. I. ANDREWS is now staff engineer, education and procedure; RUSSELL PERKINS advances to superintendent of production manufacturing division at Renton plant, succeeding HARVEY T. KENT, who is upped to assistant general superintendent of that division; ROY T. TOWE becomes assistant superintendent at Renton; FLOYD G. NESTEGARD is general foreman, C-97 assembly at Renton; GEORGE A. GRAUE is general superintendent of tooling; WILLIAM V. ROSE is general foreman of tool and die department; WILLARD L. FRANCE is assistant superintendent, fabrication division; and ROBERT W. COOPER is general foreman of machine department.

Kaiser Aluminum & Chemical Corp. appoints V. E. FLAHERTY, former chief metallurgist of Trentwood aluminum rolling mill near Spokane, technical superintendent, and WILLIAM EDMUNDS administrative superintendent. DAVID MAYERS succeeds Edmunds as rolling mill and remelt superintendent. FRANK J. WOOD resigns as plant manager of the Trentwood plant and moves to Seattle to become consulting engineer for Seidelhuber Steel Rolling Mills, Inc.

VAN B. BUTLER becomes B-52A project engineer at *Boeing Airplane Co.*, succeeding A. I. OSLUND, named senior project engineer for the C-97 and B-50 projects. A. F. KELSEY vacates the position taken by Oslund to manage a Minneapolis mechanical equipment firm. W. W. RUTLEDGE, who transfers to Wichita, Kansas, division, is succeeded by C. W. EASTON as Seattle division production manager.

WILLIAM C. BAILEY, vice president of *United States Plywood Corp.*, Seattle branch, retires after being in charge of company's West Coast operations for 16 years. Bailey is replaced by L. J. WALBY.

General Electric Co. makes a major personnel reorganization at Hanford atomic plant at Richland which results in top jobs for nine men. Heads of new staff departments are as follows: GEORGE C. BUTLER, counsel; WILLIAM W. SMITH, manager of finance; HOWARD E. CALLAHAN, manager of employee and public relations; HERBERT M. PARKER, director of radiological sciences, and WILLIAM D. NORWOOD, director of medical services. Heads of new line departments are as follows: ALDEN D. GREENINGER, manager of engineering; CHARLES N. GROSS, manager of manufacturing; FORREST E. BAKER, manager of utilities and general services, and LEWIS F. HUCK, manager of the community, real estate and services. GE's radiological sciences department at Hanford Works makes the following changes in department heads: biophysics section, C. C. GAMERTSFELDER is new manager. Gamertfelder also heads radiation measurement department. R. C. THORBURN now is head of control unit, and J. W. HEALY is head of environment hazards and general studies unit. Biology section: H. A. KORNBERG, manager; R. F. FOSTER, head of aquatic biology unit; R. C. THOMPSON, head of metabolism unit; and L. K. BUSTAD, head of toxicology unit. Radiological records and standards: W. A. MCADAMS, manager; H. A. MELODY, head of exposure records unit; J. M. SMITH, head of standards unit; A. J. STEVENS, head of radiation monitoring services unit; and G. L. HELGESON, supervisor of radiological records and standards section.

MODERN TIME AND COST SAVERS BUILT BY...



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These standardized units can be used as extensions to present conveyors, as individual conveyor units, or to build a complete flow system of belt, live roller, and gravity conveyors. The Handidrive "package" consists of drive and takeup units, end roller assemblies, intermediate framework, supports and hangar — everything needed to make complete conveyors. Flexible and adaptable to many needs.

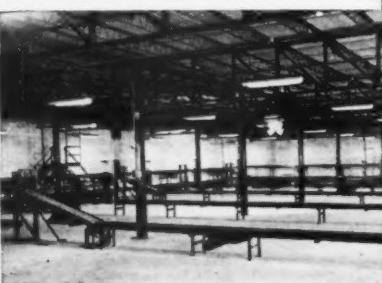
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Save Time Loading — UNLOADING with the EXTENDOVEYOR

This compact, mobile, easily maneuverable power-belt conveyor unit extends to 46' in either direction and retracts to 9' 10". Reaches into cars, trucks, trailers. Handles boxes, bags, bundles, cartons, crates, cases weighing up to 150 lbs. Available in two models — 1 way stretch and 2 way stretch — and 4 sizes. Write for Extendoveyor Bulletin — address Dept. WI-101.



Write for Bulletin
63-B, address
Dept. WI-101.



ASSOCIATIONS ELECT

National Constructors Association: executive committee, J. S. FLUOR, executive vice president, Fluor Corp., Ltd.

National Association of Manufacturers: San Francisco regional manager, JOHN F. SHIELDS; Pacific Northwest regional manager, JOHN R. McGRAW.

Pacific Coast Gas Association: president, W. N. JACOBS, vice president, Southern California Gas Co.; vice president, J. S. MOULTON, Pacific Gas & Electric Co.; treasurer, HARRY GANN, Pacific Gas & Electric Co.; assistant treasurer, GROVER TRACY, Pacific Gas & Electric Co.; assistant manager, J. E. KERN, Los Angeles.

California Walnut Growers Association: general manager, WILLIAM C. TESCHE.

American Society of Tool Engineers, Albuquerque Chapter: chairman, JEROME F. DURR, Sandia Corp.; first vice chairman, ORTH C. LACKY, Maisel's Indian Trading Post; second vice chairman, DOUGLAS KEN-



Jacobs

NEDY, Sandia Corp.; secretary, ALLEN E. HALL, Sandia Corp., treasurer, FRED H. DEIBER, Sandia Corp.

Los Alamos Chapter: chairman, JOSEPH A. PARKS, University of California; first vice chairman, NORMAN C. BLEZEK; second vice chairman, WILLIAM A. WILSON, University of California; secretary, WILBUR L. HOFFMAN; treasurer, WILLIAM C. MOXLEY.

Northwest Electric Light and Power Association: president, A. D. CUMMINS, president, California-Oregon Power Co.; first vice president R. E. GALE, Idaho Power Co., second vice president, JOHN DIERDORFF, Pacific Power and Light Co.

California Olive Association: vice president, EDWARD VAN DELLEN, Pacific Olive Co., Visalia.

Southern California Aluminum Foundry Association: acting chairman, executive committee, DAVID L. O'BRYAN, Moore Pattern Foundry; committee members, FRANK GAINES, Gaines Co.; W. R. TURNER, Turner Piston Co.; L. N. BUNKER, Aluminum Casting Co.; and W. C. SMITH, H. & S. Metal Products Co.

Industrial Packaging and Materials Handling Engineers: Northern California Chapter president, GENE SCHMITT; vice presidents, JACK DOHRMAN and FRED COOK.

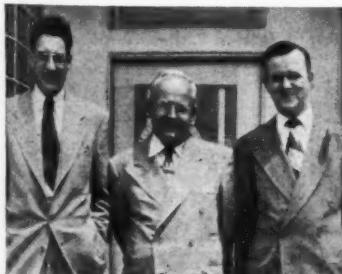
New Mexico Miners and Prospectors Association: executive secretary and treasurer, DWIGHT H. PLACKARD.

Western TRADE WINDS

News about those who distribute and sell industrial equipment and materials

Hyster Co. promotes JACK A. CAIRNS, formerly Southern California salesman, to a district manager position in the East. JAMES T. OLIVER replaces Cairns.

LEE A. GUTTERO, WALTER H. OSTRING and ROBERT E. UTERMÖHLEN organize *Transmission Products Co.*, 6912 Santa Fe Ave.,



Guttero Ostring Utermohlen
Huntington Park, Calif. They will be factory representatives for various types of power transmission equipment.

Pump Engineering Co. closes its office at 2724 East 55th St., Seattle, Wash. Personnel of the Seattle office move to Los Angeles office at 2011 Santa Fe. Pump Engineering

opened the Los Angeles office two years ago, taking over fifty-year-old jobbing business of *Smith Booth Usher Co.* R. G. WEMPLE, who has managed Seattle office, joins Los Angeles force in a sales capacity.

A. C. Horn Co., Inc., appoints REG STEIN, former Los Angeles sales engineer, Los Angeles district manager, replacing SIDNEY BLUM, deceased. Stein will cover operations in Southern California, New Mexico and Arizona.

SKF Industries moves its Portland, Ore., offices from 1101 Glisan St. to 1625 N.W. Hoyt St. New quarters will provide larger and better facilities for servicing their customers.

Sierra Electric & Manufacturing Co., Los Angeles, Calif., appoints F. W. Walters sales manager.

American Steel & Wire Co. names H. C. HOV manager of sales, Denver, Colo., district, succeeding THURMAN HASKELL. Haskell is assigned duties on the staff of area manager of sales, Western district, Chicago, Illinois.

H. W. PETERS, former assistant credit manager for Pacific division of *B. F. Goodrich Co.*, Los Angeles, takes over as Seattle district credit and operating manager. He succeeds A. B. SENNE, who now handles auto

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PROTECTIVE PACKAGING**

A combination of corrugated and wrapping paper, manufactured in various weights to meet your requirements.

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Mere payment
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● It is easy to buy fire insurance but difficult to prove a loss.

When fire occurs you must be able to prove what you lost and its cash value.

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**The AMERICAN
APPRaisal
Company**



Over Fifty Years of Service
OFFICES IN PRINCIPAL CITIES

YOU CAN PROFITABLY USE

YUBA's Manufacturing Facilities

**Located in San Francisco
Bay Area at Benicia**

For contract manufacturing and for sub-contracting parts and assemblies, use YUBA and save time, expense, and personnel worries. Our varied plant facilities enable us to handle almost any metal product—light or heavy. We have skilled workers and a long-time reputation for stable labor relations, plus years of experience in contract manufacturing and fabricating for private industry and government.

Services Available to You Include—

- ✓ Carbon and alloy steel forging
- ✓ Heat treating
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These services are especially adaptable to manufacturers wishing to sub-contract defense orders.

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YUBA's plant is located at Benicia, Calif., handy to deep water, transcontinental railroad, truck and air shipping. General offices and engineering department are situated in San Francisco's financial district.

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Room 701 • 351 California St. • San Francisco 4, Calif.

and home supply sales of BFG replacement tires over a wide portion of the Pacific Northwest.

Sales representative covering California, Arizona, Nevada and New Mexico for R-C Scientific Instrument Co., Playa Del Rey, Calif., is C. R. Strassner Co.

THEODORE E. TRAUGOTT is appointed Western regional manager for Locke Department (manufacturers of insulators) of General Electric Co., with offices at 1229 Burlingame Ave., Burlingame, Calif.



Traugott

Coast Equipment Co. moves from 948 Bryant St., San Francisco, to larger and more modern quarters at 444-8th St.

Gerald B. Miller Co., Hollywood electronic engineering firm, establishes a branch office in Albuquerque, N. Mex., with PIERCE E. BROOKS in charge. THEODORE L. LINCOLN joins Miller's Los Angeles staff as application engineer. Stevens Manufacturing Co., Chicago manufacturer of thermostats, has selected this firm for its representation in California, Arizona, Nevada and New Mexico.

Carl A. Stone Associates, Los Angeles electronic representative adds CHARLES R. FETTY to staff of sales engineers. Stone now represents Audak Co., New York City.

New intermountain area representative for Rust-Oleum Corp., Evanston, Ill., is Industrial Supply Co., 121 Motor Ave., Salt Lake City.

Address of American Pulley Co.'s new Los Angeles district office is 1253 S. Atlantic Blvd.

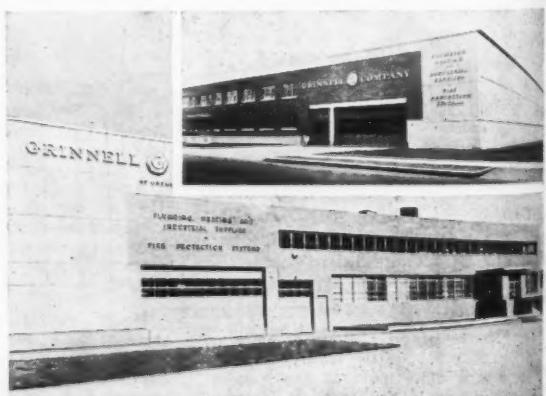
Ziegler Steel Service Company's Oakland, Calif., division at 727 66th Ave., is now open for business. WELDON DRAPER has become associated with this firm in a sales capacity and will handle territory comprising East Los Angeles, Pasadena, Alhambra and San Gabriel Valley. LEROY MORRIS now covers

Grinnell Company, Providence, R. I., recently opened two new Western warehouses and sales offices. One, located at 2175 Fifteenth St., Denver, is of modern design

GRINNELL CO. EXPANDS

Photo at top right shows Denver branch.

Below is new branch in Portland.



sales in the state of New Mexico for this company.

Ditto, Inc., Chicago manufacturer of duplicating machines, transfers H. G. DENYVEN, former Cincinnati manager, to Oakland to manage printing division of its recently established Western regional headquarters. HOMER DEFOE, widely known in Oakland's printing industry, has recently become associated with this firm.

Degen Fiege Co., Los Angeles, manufacturer's distributor specializing in power transmission equipment, is celebrating its 76th Anniversary. Company recently moved to new, modernized quarters at 1733 E. 15th St.

ALVIN S. BAER, vice president in charge of sales, A. C. Horn Co., Long Island City, N. Y., after investigating his company's West Coast offices, reports that the Pacific Coast continues to hold the greatest potential for business expansion, in the country. Just another sign of our growing industrial strength here in the West.

Neely Enterprises, Hollywood, Calif., is named to represent Computer Research Corp., Hawthorne, Calif., in California, New Mexico, and Arizona.



Mahoney

GEORGE DAVIS, Los Angeles, Calif., named Southern California representative for Peerless division of Altec Lansing Corp., Beverly Hills, Calif.

Owens-Corning Fiberglas Corp., manufacturers of insulating materials and mat products, appoints WILLIAM H. CURTISS textile sales manager for the 11 Western states. Curtiss' staff includes DAVID R. DYAS, ERVON WHITE and JOHN B. MOORE, Jr. Owens-Corning eventually expects to establish

with 45,000 sq. ft. of floor space, and carries complete line of Grinnell products. The other is located at 3240 N.W. 29th Ave., Portland, Oregon.

Space is sold as advertisers' inches. All advertisements in this section are $\frac{1}{2}$ in. short of contracted space to allow for borders and composition.

CLASSIFIED SECTION

Rates are \$7.50 a column inch. Copy should be sent in by the 10th of preceding month if proofs are required; by the 15th if no proofs are required.

FOR SALE: Complete carton packaging line for dry, free flowing material. Pneumatic Scale 30 per minute with Standard Knapp case sealer. In top operating condition. Line can be bought at saving of approximately \$7500. under new equipment. Location California. Immediate delivery. Box 371, Western Industry, 609 Mission St., San Francisco 5.

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QUALITY 8x10 GLOSSY PHOTOS **7c** each
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THE LARGEST PHOTO REPRODUCTION PLANT IN THE WEST

Pacific Coast manufacturing facilities for Fiberglas yarn.

Northwest Foundry & Furnace Co., Portland, Oregon, manufacturer of WESCO furnaces, appoints RUSSELL R. ATKINSON sales manager of heating division. FRANK L. WALLER, JR. becomes Eastern sales representative. Atkinson, formerly sales representative for Minneapolis-Honeywell, has been with WESCO for three years as factory representative, Eastern division.

ROBERT W. GRAY appointed administrative assistant to J. A. LUDWIG, sales manager, paint division of *Pabco Products, Inc.* Gray was formerly territorial representative in Oakland and the East Bay.

JAMES P. GORMLY, *Goodyear Tire & Rubber Co.*, promoted to district manager at Los Angeles, Calif. HAROLD B. GARDNER replaces Gormly as field representative at San Francisco.

Babcock & Wilcox Tube Co., Pacific Coast office moves from 714 Olympic Boulevard in Los Angeles to larger quarters in the Lawson-Chipman Building at 1111 Wilshire Boulevard.

SHELDON T. DAHL, *American Cyanamid Co.*, Los Angeles, becomes West Coast manager of industrial chemicals division and plastics and resins division. HERBERT G. PRATT is appointed San Francisco office manager for industrial chemicals division.

WILLIAM A. SPENCE appointed general manager, *Ohio Hoist & Mfg. Co.*, a *Round Associate Chain Company*. Spence has been a field engineer for the past five years, assigned to sales and service in Northern California, Utah, Nevada, Idaho and Wyoming for Manning, Maxwell & Moore, Inc.

Whitney Chain Co., Hartford, Conn., moves its district sales office from 1547 Mission St., San Francisco, Calif., to new and larger quarters at 70 Dorman Ave. Office is directed by GEORGE F. HAAG, district manager.

Magnetic Coil Corp., Ossining, N. Y., maker of powdered iron cores, toroids and ferrites, appoints G. S. MARSHALL CO., Pasadena, Calif., as representative in California, Arizona, New Mexico and Nevada.

Alumatic Corp. of America names RALPH R. TATE Intermountain distributor for storm windows and doors. Operating under the name of *Alumatic Door & Window Co.*,

ARIZONA MANUFACTURING LOCATIONS

Vacant buildings up to 41,000 sq. ft. or floor space suitable sub-contracting light defense industries. Metal work, fabric, woodworking, ceramics, etc. Also low cost acreage. Excellent community cooperation. Healthy climate, ample labor. For information on sales or leases, write

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Desires position as Administrative Assistant to responsible executive. Age: 37. Graduate Mechanical and Industrial Engineer. Thoroughly experienced all phases of manufacturing, Financial, Operating, Technical. Presently located in Denver. Prefer smaller community. Minimum salary \$7200.

Address Box 372
WESTERN INDUSTRY
609 Mission Street, San Francisco 5

firm is establishing headquarters at 155 W. Commonwealth Ave., Idaho Falls, Idaho. Tate's associates are JOEL TATE, sales manager for northern Utah and Idaho; GLENN HINKLE, production manager, and DALE JOHNSON, office manager.

De Laval Steam Turbine Co., Trenton, N.J., completes new San Francisco headquarters for sales and service activities at 160 Folsom St. C. F. REEVES, long-time head of De Laval's West Coast sales, directs this new



De Laval Co. completes new headquarters

activity. Building increases warehousing facilities for standard centrifugal pumps, IMO pumps, speed reducers and flexible couplings and permits faster handling of repair and service orders for De Laval's customers.

Gertsch Products, Inc., Los Angeles, Calif., names RON MERRITT, Seattle, Washington, Northwest representative to handle its frequency meters.

MERLE MILLER, JR. joins *Lisle & Leif Co.*, 2707 S. Hill St., Los Angeles, Calif., in a sales capacity. Miller was formerly employed by *Aro Equipment Co.*, Bryan, Ohio.

FRED W. HUTCHINSON and GEORGE E. CROMWELL incorporate a new firm, *Empire Rubber & Supply Co.*, at N.W. 18th Ave.

and Marshall St., Portland, Ore. They have been named distributor for *Goodyear Tire & Rubber Co.*, and will handle a general line of related supplies for the industrial and contracting trades. Cromwell worked for Goodyear for 25 years. Hutchinson worked for the same concern for two years, and prior to that was with *J. E. Haseline & Co.* for 15 years. Their headquarters, built in 1949, provides 50 x 100-foot warehouse and office space combined.

McCulloch Motors Corp., Los Angeles, Calif., promotes W. L. RUSCH to assistant sales manager. Rusch will handle all power chain-saw sales through firm's national distributor organization.

Flexitallic Gasket Co., Camden, N. J., names *Steel & Engineering Products Co.*, El Paso, Texas, as new agent for southwestern Texas, southern New Mexico and Arizona.

PARK Q. WRAY, formerly director of sales, is elected vice president of sales for *National Motor Bearing Co.*, Redwood City, Calif.

A. W. MAAS succeeds E. D. PIKE, retired, as manager of San Francisco electrical office for *Wagner Electric Corp.* Maas has been a sales engineer for the company since 1939.

DoAll Co. expands store facilities at its San Francisco branch. New modernized store enables company to handle a complete line of machine tools, cutting tools, gaging equipment and industrial supplies.

National Cylinder Gas Co. recently moved into its new dry ice and carbonic warehouse at 4560 Pacific Blvd., Vernon, Calif. NCG is a nation-wide manufacturer of oxygen, acetylene, hydrogen and other industrial gases as well as welding equipment and supplies.

INDEX TO ADVERTISERS IN THIS ISSUE

Alan Wood Steel Company.....	78
Allegheny Ludlum Steel Corp.....	49
Allen-Bradley Co.....	3 & 4
Aluminum Company of America.....	10 & 17
American Air Filter Company, Inc., Pacific Division.....	56
American Appraisal Company.....	115
American Blower Corporation, Subsidiary of American Radiator & Standard Sanitary Corporation.....	63
American Felt Company.....	86
American Liquid Gas Corp.....	72
Angelus Engineering Corp.....	89
Angier Pacific Corporation.....	68
Apparatus Division, Westinghouse Electric Corporation.....	20 & 21
Atkins, E. C., & Company.....	18
Bay State Abrasive Products Co.....	81
Bethlehem Pacific Coast Steel Corp.....	61
Boston Woven Hose & Rubber Company.....	8
Buda Company, The.....	74
C. B. S. Steel & Forge Company.....	71
California Barrel Co., Ltd.....	2nd Cover
California Cornice, Steel & Supply Corporation.....	111
California-Western States Life Insurance Company.....	85
California Wire Cloth Corporation, The, Subsidiary of The Colorado Fuel and Iron Corporation.....	87 & 101
Calstrip Steel Corporation.....	113
Chase Brass & Copper, Subsidiary of Kennecott Copper Corporation	22
Colorado Fuel and Iron Corporation, The.....	87 & 101
Colson Equipment & Supply Co.....	26
Connor Spring Manufacturing Company.....	110
Crane Co.....	16
Currier Company.....	102
Degen-Fiege Co. (Lubriplate).....	30
Degen-Fiege Co. (Proto-Tools).....	17
DoAll Company, The.....	28 & 29
Eastman Tag & Label Co.....	101
Ederer Engineering Company.....	66
Electric Wheel Company.....	98
Electrolift, Inc.....	102
Faultless Caster Corporation.....	76
Flexible Tubing Corporation.....	104
French & Hecht Division, Kelsey-Hayes Wheel Co.....	100
Freightliner Trailor Company, Body Division.....	11
General Petroleum Corporation.....	3rd Cover
Glas-Kraft, Inc.....	83
Harnischfeger Corporation.....	54
Heine, W. F., Supply Co.....	91
Horn, A. C., Company, Inc.....	6
Hydroway Scales, Inc.....	84
Hyster Company.....	32
Industrial Air Products Company.....	98
Johnson Gear & Mfg. Co., Ltd.....	103
Johnston, A. P., Company.....	118
Kaiser Steel Corporation.....	12
Kilbury Mfg. Co.....	96
Kux Machine Company.....	95
Ledeen Mfg. Co.....	86
Lewis-Shepard Products, Inc.....	7
Link-Belt Company, The.....	100
Lovejoy Flexible Coupling Co.....	94
Lufkin Foundry & Machine Company.....	108
Maas, A. R., Chemical Co.....	112
Magnesium Company of America.....	111
Manheim Manufacturing & Belting Company.....	53
Martin Brothers Box Company.....	80
Mathews Conveyor Company West Coast.....	62
Metzgar Co.....	94
Monarch Rubber Company, The.....	9
National Paint, Varnish and Lacquer Association, Inc.....	73
National Screw & Mfg. Co. of Calif.....	39
National Supply Co., The.....	15
Noland Paper Company, Inc.....	83
Nutting Truck & Caster Company.....	97
Oakite Products, Inc.....	96
Ohio Seamless Tube Company.....	22
Owens-Corning Fiberglas Corporation.....	77
Pacific Telephone & Telegraph Co.....	92
Paddock Engineering Company of California.....	105
Pioneer Rubber Mills.....	64
Prescott, George M., Company.....	100
Racine Tool & Machine Co.....	93
Realock Fence Division, The Colorado Fuel and Iron Corporation.....	87 & 101
Republic Supply Company of California.....	109
Revere Copper & Brass, Inc.....	45
Roll-Rite Corporation.....	91
Russell, Burdsall & Ward Bolt & Nut Company.....	27
Ryerson, Joseph T., & Son, Inc.....	34
Santa Fe Railway Co.....	66
Schwartzman, J., Mfg. & Supply Co.....	85
Scientific Lubricants Co.....	101
Shell Oil Company, Inc.....	24
Shepard Niles Crane & Hoist.....	107
Sherman Paper Products Corp. of Calif.....	113
Signode Steel Strapping Co.....	97
S K F Industries, Inc.....	75
Smooth-Holman Co.....	91
Snap-On Tools Corporation.....	81
Soule Steel Company.....	65
Standard Conveyor Co.....	114
Standard Oil Company of California.....	14
Stanley Works, The.....	25
Stephens-Adamson Mfg. Co.....	4th Cover
Sturtevant Division, Westinghouse Electric Corporation.....	71
Towmotor Corporation.....	81
Vapofier Corporation.....	110
Victor Equipment Company.....	91
Webb, Jervis B., Co.....	93
West Bend Equipment Corporation.....	104
Westinghouse Electric Corporation.....	20, 21 & 71
Westinghouse Electric Corporation, Apparatus Division.....	20 & 21
Westinghouse Electric Corporation, Sturtevant Division.....	71
Wickwire Spencer Steel Division, The Colorado Fuel and Iron Corporation.....	87 & 101
Wisconsin Motor Corporation.....	113
Yale & Towne Manufacturing Company, The.....	11
Yuba Manufacturing Co.....	114

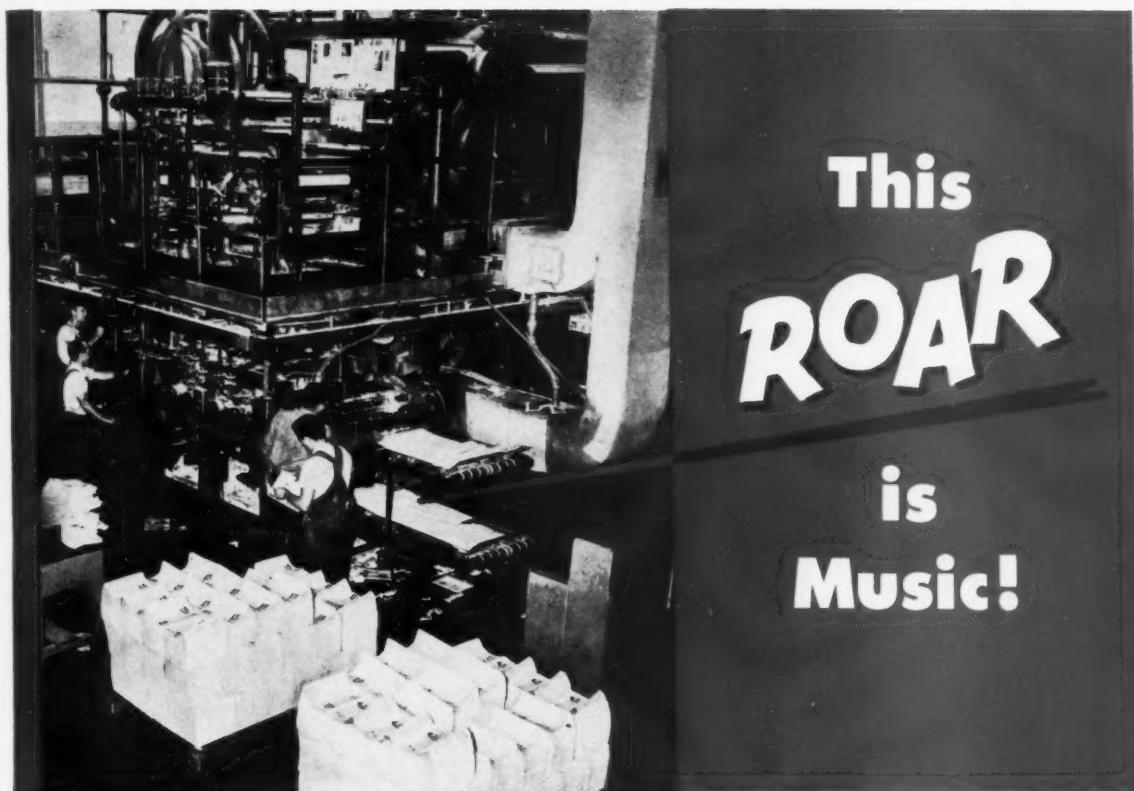
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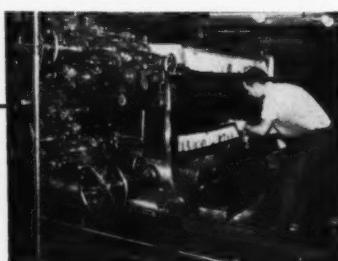
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Pacific Press Methods Supervisor, Jerry Maras, discusses lubrication techniques with G. P. representative Don Walker and Maintenance Supervisor Erwin Ashton.



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3-203

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At
ROCK BOTTOM**

Cost Per Ton

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Washington Machinery & Storage
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Bulk Material Handling Equipment

P.L.&L.
STAGE
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co. Calif.
o. 4167

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